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ARMY MEDICAL DEPARTMENT.

STATISTICAL,
SANITARY, AND MEDICAL
REPORTS

FOR THE YEAR
1859.

Presented to both Houses of Parliament by Command of Her Majesty.

LONDON:
PRINTED BY HARRISON AND SONS,
FOR HER MAJESTY'S STATIONERY OFFICE.

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1859

TO THE RIGHT HONOURABLE

THE SECRETARY OF STATE FOR WAR.

My Lord,

In accordance with the instructions laid down for the conduct of business by the Director-General and Heads of Branches of the Army Medical Department, I have the honour to submit the accompanying Reports on the Health of the Army in 1859, and on various matters connected with the duties of the Officers of the Department.

Circumstances have unavoidably delayed the completion of the Volume longer than I had anticipated; but I trust that in future the Annual Report will be ready at an earlier period.

I have the honour to be,

My Lord,

Your Lordship's most obedient humble servant,

J. B. GIBSON,

Director-General.

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STATISTICAL REPORT

ON THE

HEALTH OF THE ARMY IN 1859.

BY

T. GRAHAM BALFOUR, M.D., F.R.S.,

DEPUTY INSPECTOR-GENERAL OF HOSPITALS, AND
HEAD OF THE STATISTICAL BRANCH.

TO THE DIRECTOR-GENERAL

OF THE

ARMY MEDICAL DEPARTMENT.

SIR,

In submitting the first Annual Statistical Report on the Health of the Army, it may not be out of place to notice some of the circumstances which have delayed its preparation, and rendered it less complete than will, I trust, be the case in future.

1. Among the important changes made in the forms of Returns, an alteration in the date to which they are made up involved the necessity of compiling the Abstracts from two series of documents instead of one, and also greatly increased the labour of checking the mortality by the War Office Returns. This will not affect subsequent Reports, and the difficulty hitherto experienced in ascertaining that none of the deaths have been omitted, will be obviated by the Nominal Return to be furnished in future by officers commanding regiments.

2. The adoption of a Classification of diseases differing from that used in former reports has also caused delay in every instance when a comparison had to be made between the results of 1859 and previous periods.

3. The time and labour required for organizing the Statistical Branch of the Department, introducing the new Forms of Returns, and carrying out the recommendations of the Sanitary Commission, have also contributed materially to retard the preparation of the volume.

4. The imperfect state of some Returns, and the loss or absence of others, and also the change which was made during the year in the organization of the Artillery, have all had some influence in rendering the Report less complete than it will probably be in future years, particularly as regards the Force serving at Home. Measures have been taken to

obtain more complete Returns, which will, it is believed, prove successful in removing these defects; but in the meantime we have found it necessary to omit all notice of the sickness and mortality among the Officers, and the information respecting the causes and extent of invaliding is very meagre.

5. It will be observed that no information is given respecting the troops serving in India. The returns, particularly from the Bengal Presidency, had, during the pressure of work arising from the Mutiny, been allowed to fall into arrear; and as the Mutiny was not finally put down till early in 1859, it was considered better to reserve any notice of the health of the troops, for a detailed history of the medical events of that period, which it is hoped may be drawn up from the documents in this Office at no very distant date.

6. No pains have been spared to make the Report as complete as the nature of the documents would permit; but as it has been necessarily prepared from the old forms of Returns, there are several important questions connected with the health of the army, upon the consideration of which it has been found impossible to enter at present, from want of sufficient data. I have deemed it necessary to point out a few of the difficulties attending the preparation of the Report, chiefly to prevent its being supposed that the present is the utmost extent of the information to be deduced from the more complete system of Returns recently adopted in the Department.

I have the honour to be,

Sir,

Your most obedient humble servant,

T. Graham Balfour,
Deputy Inspector-General.

6, *Whitehall Yard,*
March 1861.

STATISTICAL REPORT FOR 1859.

I. ON THE HEALTH OF THE TROOPS SERVING IN THE UNITED KINGDOM IN 1859.

Section I.

Sickness and Mortality.

United Kingdom.

As it was shown in previous statistical reports that different rates of mortality prevailed in the Household Cavalry and Cavalry of the Line, the Infantry, and the Foot Guards, it seemed desirable, on the present occasion, to ascertain whether the same diversity continued to manifest itself. We have also been enabled, for the first time, to refer to the diseases affecting the Household Cavalry, and to include in our investigation the details relative to the health of the Ordnance Corps. As regards the latter, however, the inquiry must, be confined to that portion serving in Great Britain, owing to the loss of a packet of returns in transmission through the Post Office from Dublin to London. This is perhaps the less to be regretted, as, in consequence of the change of the organization of the Artillery in 1859, it would have been impossible to enter into the same details as in the other arms of the service. It is hoped that in future no such difficulty will be experienced.

In investigating the sickness and mortality of the troops of the Line, the Depôt Battalions have been kept separate from the regiments serving at home, as it was considered probable that, owing to the peculiarity of their constitution —the large proportion of recruits passing through them in the course of the year, and the number of men sent to them from the service companies with constitutions impaired by foreign service—a considerable difference might be found to exist both in the prevalent diseases and in the amount of mortality.

The following table shows the average strength, the admissions into hospital, and the deaths from all causes, both in and out of hospital, in the different arms of the service, from 1st January to 31st December, 1859, together with the results obtained for the ten years, 1837-46 :—

	Strength	Admitted into Hospital	Died	Ratio per 1,000		1837-46 Annual ratio per 1,000	
				Ad-missions	Deaths	Admis-sions	Deaths
Household Cavalry ..	1,213	653	10	538	8·24	..	11·09
Dragoon Guards and Dragoons	8,059	7,908	64	981	7·94	962	13·64
Royal Artillery	11,508	14,877	92	1,293	7·99	1189	13·92
Royal Engineers	1,243	1,579	9	1,270	7·24	..	..
Military Train	1,139	1,439	7	1,263	6·14	..	..
Foot Guards	5,939	4,701	54	791	9·09	862	20·43
Infantry Regiments ..	19,621	18,915	149	964	7·59	1044	17·89
Depôt Battalions	22,993	26,421	311	1,148	13·52	..	..

From this table it appears that the admissions into hospital have been under the former average in the Foot Guards and Infantry of the Line, but above it in the Cavalry and Artillery. It must be remembered, however, that the previous returns of the Artillery referred to Woolwich alone, while those of 1859 include the Artillery at all the stations in Great Britain.

As the rate of mortality increases with advancing age, it is essential to the accuracy of the comparison between the different classes of troops that the proportion of men serving at different periods of life should be taken into account. The necessary correction has accordingly been made in the following table, the numbers serving at each quinquennial period of life in the Dragoon Guards and Dragoons being taken as the standard, and for the purpose of comparison the mortality during the ten years, 1837-46, has been added :—

	1859	1837-46
Household Cavalry	4·27	10·39
Dragoon Guards and Dragoons..	7·94	12·08
Military Train	7·09	..
Foot Guards	8·59	18·72
Infantry Regiments	7·58	17·06
Depôt Battalions	12·26	..
Civil Population in healthy districts	7·23	..

Unfortunately there are no means of ascertaining the ages of the Royal Artillery and Engineers for the period under review, but they may be assumed as nearly approaching those of the Cavalry; and the returns of the ages of the men composing the Depôt Battalions must be accepted as merely an approximation, owing to the great changes which take

United Kingdom.

place in the composition of these bodies of troops in the course of the year.

This table shows a remarkable and most satisfactory reduction in the amount of mortality in all classes of troops; indeed, except in the Depôt Battalions, it is little above that of the civil population in the healthiest districts of England. The Foot Guards, can scarcely be held as on an equality, in a sanitary point of view, with the inhabitants of such districts, being quartered chiefly in London, and with some of their barracks in the most densely peopled quarters; but even among them the mortality is lower than among the male population at the same ages throughout England and Wales. In the case of the Household Cavalry, the numbers are so limited that the proportion might be expected to fluctuate considerably; but in the others the marked decrease can hardly be deemed accidental. It cannot be attributed to the contingency of an unusually healthy season, for the mortality of the civil population, in 1859, did not differ materially from the average of former years. Nor has it arisen from a greater proportion of men being discharged as invalids, for, as will be hereafter shown, the number thus disposed of was, except in the Foot Guards, under the previous average. It may, perhaps, have been in some degree the effect of selection, as so much larger a proportion of the force than formerly consisted of men recently enlisted, and who may not have been exposed for a sufficient length of time to the deteriorating influences which affect a soldier to have materially suffered in health from them. It will therefore be interesting to observe, whether under improved sanitary conditions this diminished rate of mortality can be in future maintained.

This view of the influence of selection in reducing the mortality is to some extent borne out by the difference in that of first battalions as compared with second battalions. The latter, being all of recent formation, were composed to a great extent of newly raised men. The mortality in each, during the year 1859, was as follows:—

	1st Battalions and Single Batt. Regiments	2nd Battalions
Average strength	10,085	9,536
Deaths during the year	91	58
Rates of Deaths per 1,000 of strength	9·02	6·08

This might also account for the favourable results obtained with regard to the Military Train, which contained even a larger proportion of newly raised men than the second battalions of Line Regiments.

Before proceeding to make some observations on the relative prevalence of the different classes of diseases in the army, it may be necessary to remark, that the Secretary of State for War having directed that the classification of diseases used by the Registrar-General, for the returns of the civil population, should in future be adopted in the army, the various abstracts in the Appendix, and the tables throughout this Report, have been made up in accordance with these instructions. The following are the classes and orders in which diseases are grouped under this arrangement:—

I. **Morbi Zymotici—Zymotic diseases.**

Diseases that are either epidemic, endemic, or communicable; induced by some specific body, or by the want or by the bad quality of the food.

In this class are comprised the following orders:

1. Miasmatic diseases. | 3. Dietic diseases.
2. Enthetic diseases. | 4. Parasitic diseases.

II. Morbi cachectici—Constitutional diseases.

Sporadic diseases; affecting several organs in which new morbid products are often deposited; sometimes hereditary.

Order 1. Diathetic diseases. | 2. Tubercular diseases.

III. Morbi monorganici—Local diseases.

Sporadic diseases, in which the functions of particular organs or systems are disturbed or obliterated, with or without inflammation; sometimes hereditary.

Order 1. Diseases of the nervous system.
2. „ „ circulatory system.
3. „ „ respiratory system.
4. „ „ digestive system.
5. „ „ urinary system.
6. „ „ reproductive system.
7. „ „ locomotive system.
8. „ „ integumentary system.

IV. Morbi metamorphici—Developmental diseases.

Special diseases, the incidental result of the formative, reproductive, and nutritive processes.

Order 1. Developmental diseases of children.
2. „ „ women.
3. „ „ old people.
4. Diseases of nutrition.

V. Morbi Thanatici—Violent diseases or deaths.

Diseases which are the evident and direct results of physical or chemical forces, acting either by the will of the sufferer, or other persons, or accidentally.

Order 1. Accident. | 4. Suicide.
2. Battle. | 5. Execution.
3. Homicide. | 6. Corporal punishment.

The nomenclature employed is that drawn up by the Statistical Congress, held at Paris in 1855, under the auspices of the French Government.

The following table, compiled from Abstract No. I of Appendix, shows the admissions into hospital, and deaths by the different groups of diseases during the year 1859:—

Unite
Kingd

	Household Cavalry.		Dragoon Guards and Dragoons.		Royal Artillery.*		Royal Engineers.*		Military Train.		Foot Guards.		Infantry Regiments.		Depôt Battalions.	
Strength	1,213		8,059		11,508		1,243		1,139		5,939		19,621		22,993	
	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
Class I.																
1. Miasmatic diseases	149	..	1,259	8	2,611	9	401	..	196	1	860	6	3,299	22	5,673	38
2. Enthetic "	146	..	3,244	..	6,575	1	582	..	661	1	2,007	..	7,837	..	9,193	2
3. Dietic "	..	..	11	..	5	..	1	..	3	1	2	..	24	..	40	1
4. Parasitic "	4	..	105	..	120	..	4	..	58	..	100	..	533	..	1,446	..
Class II.																
1. Diathetic diseases	10	..	25	..	59	..	9	..	2	..	7	..	40	2	69	1
2. Tubercular "	9	4	94	27	224	42	25	5	11	1	92	28	249	50	366	116
Class III.																
Diseases of the—																
1. Nervous system	10	..	96	6	221	11	35	1	25	1	85	2	222	10	517	29
2. Circulatory "	5	1	35	6	141	5	4	1	15	1	13	4	137	13	246	27
3. Respiratory "	82	3	666	5	1,163	5	155	1	132	..	464	4	1,850	22	2,909	51
4. Digestive "	84	1	191	4	394	3	83	..	20	..	122	3	558	8	812	19
5. Urinary "	1	1	12	1	28	..	2	..	5	1	4	1	28	3	47	1
6. Reproductive "	1	..	23	..	24	.	2	..	..	..	8	..	20	..	33	..
7. Locomotive "	..	..	18	..	27	..	3	..	3	..	4	..	45	1	50	..
8. Integumentary "	92	..	1,298	2	1,999	2	198	..	182	..	583	1	2,512	..	2,991	3
Class IV.																
4. Diseases of Nutrition	3	..	3	..	81	..	17	..	..	..	8	..	49	..	22	..
Class V.																
1. Accidents	88	..	754	1	1,122	10	104	1	98	..	279	4	1,190	15	1,420	15
3. Homicide	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
4. Suicide..	..	..	1	4	1	4	..	..	..	..	..	..	1	3	..	8
6. Corporal punishment	..	..	40	..	82	..	..	..	21	..	10	1	107	..	160	..
Diseases not stated	19	..	33	..	100	..	4	..	12	..	63	..	214	..	417	..
Total	658	10	7,908	64	14,877	92	1,579	9	1,439	7	4,701	54	18,915	149	26,421	311

* In Great Britain only.

For the purpose of comparison these figures have been reduced to the proportion per 1,000 of the Strength, and the results of the 10 years, 1837-46, have been also arranged in the same order.

	Household Cavalry.				Cavalry of the Line.				Royal Artillery.				Royal Engineers.		Military Train.		Foot Guards.				Infantry Regiments.				Depôt Battalions.	
	1859.		1837–46.		1859.		1837–46.		1859.		1837–46.		1859.		1859.		1859.		1837–46.		1859.		1837–46.		1859.	
	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
Class I.																										
1. Miasmatic diseases	122·8	..	No data.	2·07	156·2	·99	208·4	1·88	926·9	·78	249·	1·56	322·6	..	173·1	·88	143·1	1·01	222·8	3·41	168·4	1·12	246·6	3·36	245·7	1·85
2. Enthetic "	120·4	..		..	402·5	..	206·1	·09	571·4	·09	392·	·04	468·2	..	380·3	·88	337·9	..	250·3	·02	440·4	..	277·5	·07	499·8	·09
3. Dietic "	..	..		..	1·4	..	·4	·02	·4	..	..	..	·8	..	2·7	·88	3	..	..	·03	1·2	..	·3	·04	1·7	·04
4. Parasitic "	3·3	..		..	13·	..	·2	..	10·4	..	·1	..	3·2	..	40·5	..	16·8	..	·1	..	2·2	..	·9	..	63·6	..
Class II.																										
1. Diathetic diseases	8·2	..		·09	3·1	..	3·4	·16	5·1	..	6·2	·04	7·2	..	1·8	..	1·2	..	2·8	·06	·2	·1	4·9	·15	3·	·04
2. Tubercular "	7·4	3·30		6·28	11·7	3·35	12·7	5·07	19·5	3·65	42·5	8·16	20·1	4·02	9·7	·88	15·5	4·71	27·8	12·53	16·7	2·34	17·7	8·14	15·8	5·06
Class III. Diseases of the																										
1. Nervous system..	8·2	..		·58	11·9	·74	9·8	·84	19·2	·96	24·2	1·3	28·2	·8	22·	·88	14·3	·34	8·2	·30	11·5	·51	9·2	·79	22·8	1·20
2. Circulatory "	4·1	·82		·74	4·3	·73	3·1	·59	12·2	·48	22·5	·39	8·2	·8	13·1	·88	9·2	·67	2·9	·02	7·	·08	3·5	·3	10·7	1·17
3. Respiratory "	67·6	2·47		·24	82·6	·63	143·7	1·71	101·1	·48	140·6	·26	124·7	·8	115·9	..	78·1	·67	137·1	1·03	94·3	1·12	168·9	2·35	126·5	2·23
4. Digestive "	28·	·82		·58	28·7	·51	40·8	·64	34·3	·26	31·3	·87	26·6	..	17·6	..	20·5	·51	24·6	·04	39·4	·41	36·9	1·06	35·8	·48
5. Urinary "	·8	·82		..	1·5	·12	1·2	·04	2·4	..	18·1	..	1·6	..	4·4	·88	·7	·17	·5	·04	1·4	·16	2·	·06	2·1	·04
6. Reproductive "	·8	..		..	2·9	..	·7	..	2·1	..	3·7	..	1·6	..	..	..	1·4	..	1·1	..	1·	..	·7	·01	1·4	..
7. Locomotive "	..	..		..	2·2	..	·7	..	2·3	..	2·8	·04	2·4	..	2·6	..	·7	..	·4	·04	2·8	·08	·6	·01	2·2	..
8. Integumentary "	75·9	..		·09	161·1	·24	202·	·07	165·	·17	186·5	·13	159·3	..	159·8	..	98·2	·17	100·5	·16	128·1	..	217·6	·15	169·1	·18
Class IV.																										
4. Diseases of Nutrition	2·5	..		..	·4	..	·1	·04	7·1	..	14·1	..	13·7	..	..	..	1·8	..	·2	·02	2·5	..	·2	·01	1·	..
Class V.																										
1. Accidents..	72·6	..		·33	93·6	·12	124·7	·79	97·5	·87	100·	·85	83·7	·8	66·	..	47·	·67	54·8	·34	69·6	·77	55·8	·61	62·2	·88
3. Homicide	..	..		..	..	..	..	·02	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·01	..	..
4. Suicide	..	..		..	·1	·51	..	·59	·1	·35	..	·13	..	..	..	..	..	·17	..	·24	·1	·16	..	·23	..	·38
5. Execution	..	..		..	..	..	..	..	..	..	..	·04	..	..	..	..	..	..	..	..	..	..	..	·01	..	..
6. Corporal punishment	..	..		..	4·9	..	3·3	..	7·1	..	4·6	..	..	..	18·4	..	1·7	..	1·	..	3·4	..	4·8	..	·7	..
Diseases not specified	15·7	..		·09	4·1	..	·4	·09	8·7	..	..	·13	8·8	..	10·5	..	10·6	..	·6	·02	11·	..	1·2	·30	16·4	..
TOTAL	538·3	8·23		11·09	981·2	7·94	961·7	13·64	1292·7	7·99	1189·2	13·92	1270·8	7·22	1983·4	6·16	791·6	9·09	902·4	20·43	984·	7·56	1044·	17·60	1140·1	12·84

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These ratios show that the Household Cavalry enjoy a marked exemption from disease, as compared with the other troops, while the admissions in the Royal Artillery and Royal Engineers are higher than in the other branches of the service. But this excess may, perhaps, be attributable partly to the fact that only a portion of the Ordnance Corps, for reasons previously stated, is included in this report; and partly to the circumstance that all the invalids of the Artillery are sent to Woolwich instead of Chatham, and, being attached to one of the Brigades there, tend to swell the number of admissions, though their diseases are the result of foreign service. The deaths among these invalids have been carefully excluded from the tables.

The Foot Guards have always shown a lower amount of admissions than either the Dragoon Guards and Dragoons, or Infantry, although the mortality is higher—a result which may perhaps be attributable to the larger proportion of married men among them, who are unwilling to go to hospital, unless seriously ill, on account of the stoppage made from their pay.

We shall now offer a few remarks on the different groups of diseases by which the admissions and deaths have been occasioned.

MIASMATIC DISEASES.

	Annual ratio per 1,000			
	1859		1837-46	
	Admitted	Died	Admitted	Died
Household Cavalry	122·8	..	..	2·07
Dragoon Guards and Dragoons	156·2	·99	208·4	1.88
Royal Artillery	226·9	·78	249·	1·56
Royal Engineers	322·6	..	..	..
Military Train	172·1	·88	..	..
Foot Guards	143·1	1·01	222·3	3·41
Infantry Regiments	168.1	1·12	248·6	3·56
Depôt Battalions	246·7	1·65	..	..

There has been a marked diminution both in the prevalence and mortality of miasmatic diseases. But to assist us in the inquiry as to the causes to which this may be attributable, it may be found advantageous still further to subdivide the diseases constituting this group. With this view the more prevalent forms have been classed together in the following table:—

Annual ratio per 1,000		Household Cavalry.	Dragoon Guards and Dragoons.	Royal Artillery.	Royal Engineers.	Military Train.	Foot Guards.	Infantry.	Depot Battalions.
Eruptive Fevers	Admitted..	7·42	4·47	9·91	4·83	6·14	7·41	4·13	4·74
	Died.. ..	..	·5	·26	..	..	..	·2	·23
Paroxysmal Fevers*	Admitted..	..	1·61	23·37	28·96	..	3·2	2·96	15·13
	Died.. ..	..	..	..	..	..	..	..	..
Continued Fevers	Admitted..	14·01	27·8	25·98	53·1	28·1	32·16	29·06	43·45
	Died.. ..	..	·37	·35	..	·88	·84	·66	·96
Dysentery, Diarrhœa, and Cholera	Admitted..	33·8	23·33	21·55	30·57	17·56	33·	17·07	21·74
	Died.. ..	..	·12	..	..	..	..	..	·13
Sore throat and Influenza	Admitted..	27·21	26·55	47·18	59·53	29·85	22·9	35·47	46·67
	Died.. ..	..	..	..	..	..	..	..	·04
Ophthalmia..	Admitted..	4·12	16·5	21·2	14·48	26·4	12·93	27·06	35·36
	Died.. ..	..	..	..	..	..	..	..	..
Rheumatism	Admitted..	32·97	46·66	55·79	71·6	57·94	31·65	49·08	65.4
	Died.. ..	..	..	·09	..	..	..	..	·17

Eruptive Fevers have given rise to little sickness and mortality. The admissions by small-pox amounted to 175, and the deaths to 7. Of the latter, one occurred at Brighton, and one at Dublin, in the Cavalry; one at Woolwich in the Royal Artillery; one at Dublin, and one at the Curragh, in the Infantry; and one at Chatham, and one at Walmer, in the Depôt Battalions. Of 27 cases in the Cavalry, 17 occurred in the 11th Hussars at Brighton, in January and February. They are all stated to have borne marks of vaccination, and it may be inferred, from the low rate of mortality, that it proved an efficient safeguard.

Scarlatina did not prevail to any extent, except in the Scots Fusilier Guards which furnished 27 out of 30 admissions in the brigade. Of these 20 were in Dublin, 5 in London, and 2 at Croydon.

Paroxysmal Fevers have not given rise to much inefficiency, indeed scarcely to any, except in the Ordnance Corps and the Depôt Battalions. Their prevalence in these has probably been the result of previous foreign service, and, in the case of the Artillery, is perhaps due to part of the force being quartered at Sheerness, Tilbury Fort, and Purfleet, where the vicinity of the marshes would be likely to give rise to intermittent fever. The Arsenal and practice ground

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* This group includes F. Intermittens, F. Remittens, and F. Icterodes.

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in the marshes at Woolwich, may also have materially tended to increase the number of admissions by this type of disease.

Continued Fevers have prevailed to nearly the same extent in all arms of the service, with the exception of the Household Cavalry, which has enjoyed a marked exemption, and the Royal Engineers and Depôt Battalions, in which they have considerably exceeded the average. There is some reason to fear that the excess in these corps is not quite unconnected with habits of intemperance. As compared with the results for the period 1837-46, there is a very marked reduction, both in the admissions and deaths by continued fevers, as will be seen by the following comparative statement:—

	Annual ratio per 1,000.			
	1859.		1837-46.	
	Admitted.	Died.	Admitted.	Died.
Dragoon Guards and Dragoons	27·8	·37	51·9	1·36
Royal Artillery	26·	·35	51·	·65
Foot Guards	32·2	·84	77·7	2·44
Infantry Regiments	29·	·66	69·9	2·45

In the case of the Foot Guards there is satisfactory evidence that much of this reduction is due to the adoption of sanitary measures to improve their quarters in the Tower of London.* The same conclusive evidence cannot be adduced with regard to the Cavalry and Line Regiments, but there is good reason to believe that the improvement in them is at least partly attributable to measures of a similar character.

Dysentery, Diarrhœa, &c., have been rather more prevalent in the Household Cavalry, the Royal Engineers, and the Foot Guards, than among the other troops. But as compared with the previous average there has been a considerable reduction among the Guards, probably attributable to the same cause as that of the fevers, as formerly the men quartered in the Tower of London almost invariably suffered from diarrhœa to a great extent. The draining of the ditch, and the supply of good drinking water, were very likely to effect such an amelioration.

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* See No. LXI. p. 491 of Appendix to the Report of the Commissioners appointed to inquire into the Regulations affecting the Sanitary Condition of the Army, presented to Parliament, 1858.

Sore throat appears to have been more prevalent in the Ordnance, the Infantry Regiments, and the Depôt Battalions.

Ophthalmia has been very prevalent in the Military Train, the Infantry Regiments, and the Depôt Battalions, while the Household Cavalry have enjoyed almost an immunity from it. In no arm of the service, however, has it been so prevalent as it formerly was in the Infantry, when the ratio amounted to 48· per thousand. During the year 1859, it prevailed to a much greater extent in some corps than in others. Thus, the 76th Regiment furnished 60 admissions, and the 1st Battalion, 15th Regiment, 56, and it is stated by the surgeons of both these regiments, that ophthalmia had been very prevalent in them for a period of years. It is satisfactory, however, to find that even in these corps it appears to be gradually diminishing in frequency.

Rheumatism has not undergone such a reduction as might have been anticipated from the much greater number of young men in the service than during the previous period; indeed in the Infantry Regiments it is slightly in excess of the previous average—a result which is difficult to explain, but may, perhaps, to some extent, be the effect of the greater proportion of venereal among the men, as there can be no doubt that many of the cases of rheumatism occurring in the army are the sequel of that disease.

ENTHETIC DISEASES, which comprise all the forms of venereal disease, have been the cause of much more inefficiency than any other class, in all arms of the service except the Household Cavalry, and show a marked increase in their prevalence compared with the previous average, as will be seen by the following statement:—

	Annual ratio per 1,000.	
	1859.	1837-46.
Household Cavalry	120·4	..
Dragoon Guards and Dragoons	402·5	206·1
Royal Artillery	571·4	392·0
Royal Engineers	468·2	..
Military Train	580·3	..
Foot Guards	337·9	250·3
Infantry Regiments	399·4	277·5
Depôt Battalions	399·8	..

Thus it appears that the increase of venereal has varied from one-fourth to half of the former average; except in the Household Cavalry, it has given rise to not much under one-half of the admissions into hospital, and, as the cause of so great an amount of inefficiency, deserves the serious consideration of the military autho-

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rities. In 1859 there were 422 admissions into hospital on account of venereal among every 1,000 men serving in the United Kingdom. From data which will be available for publication in the next Annual Report, the duration of cases of this class has been found to average 23·22 days. Assuming the mean strength of troops in the United Kingdom to be 90,000, the inefficiency, arising from venereal alone, must therefore be equal to the loss of the services, for the whole year, of 2,417 men, or of nearly three regiments. Not only, however, is the subject important from the loss of the services of these men, but many of the diseases included in the class are likely to impair the constitution, and, although not an immediate cause of death, to give rise to pulmonary consumption and other fatal diseases, or disqualify the men permanently for military service.

We are unable to assign any satisfactory reason for the much greater prevalence of this class of diseases among the men of the Ordnance Corps and Military Train than the other troops. It may, perhaps, arise from the large proportion of them quartered at Woolwich, which appears, by the returns of the former period, to have enjoyed an unenviable pre-eminence in this respect. We hope in a future report to be able to show conclusively the stations at which these diseases have been most frequent. The returns for 1859 do not furnish the information necessary for the careful examination of this point. It may, however, be stated, that at Aldershot the admissions appear to have slightly exceeded the average, having amounted to 433 per 1,000 of strength; among the troops quartered in Ireland, on the contrary, the ratio was considerably under the average, being only 357 per 1,000.

If the diseases of this class be subdivided into two groups, the first consisting of gonorrhœa, swelled testicle, and stricture of the urethra, and the second of primary and secondary syphilis, venereal sores and buboes, they will be found distributed in the following proportions:—

Annual ratio per 1,000 Admitted:	Household Cavalry.	Dragoon Guards and Dragoons.	Royal Artillery.	Royal Engineers.	Military Train.	Foot Guards.	Infantry Regiments.	Depot Battalions.
Gonorrhœal..	45	142	219	226	138	84	152	201
Syphilitic	75	260	352	242	442	254	247	199

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The diseases comprised in the syphilitic group are more likely to affect the general health and impair the constitution, than those in the gonorrhœal. When, therefore, the admissions by it are found to equal in number one-fourth of the whole force, it surely becomes a question of grave importance by what means these diseases can be diminished.

Dietic Diseases have given rise to very little inefficieny. The two deaths recorded, one in the Military Train, and the other in the 19th Depôt Battalion, at Fermoy, were the result of drinking a quantity of ardent spirits.

Parasitic Diseases were most prevalent in the Military Train and Depôt Battalions, owing to the number of recruits who joined in the course of the year, many of whom were affected with itch.

Diathetic Diseases do not appear to require any special remark.

Tubercular Diseases have been the cause of more deaths than any other class; but even with regard to them, there is reason for congratulation in the reduced ratio compared with former periods. This is most marked in the Foot Guards and Infantry Regiments, though, even in the Household Cavalry, and Dragoon Guards and Dragoons, the loss by them is very little over half the former average. If the diminished mortality in the army be, as already suggested, in some degree attributable to the influence of selection and of the large proportion of young soldiers in the ranks, it is in this class of diseases that its effects would be most strongly marked. The very small number of deaths by these diseases in the Military Train, appears to support this opinion, which is still further corroborated by the difference in the mortality by them in 1st battalions and single battalion regiments compared with the recently raised 2nd battalions. In the former, the deaths by tubercular diseases, have been in the ratio of 3·27 per 1,000 of the strength; while in the latter, they have only amounted to 1·78 per 1,000.

Of the orders comprised in the class of Local Diseases, those of the

Nervous System have exceeded the previous average, except in the Royal Artillery, in which corps, however, they are still more prevalent than either in the Guards or the Line.

Delirium Tremens, which has been included in this order, has furnished the following proportions of admissions in the different arms:—

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Household Cavalry	4·94	per 1,000.
Dragoon Guards and Dragoons	1·98	„
Royal Artillery	2·60	„
Royal Engineers	5·63	„
Foot Guards	·34	„
Infantry Regiments	1·63	„
Depôt Battalions	4·35	„

From this it appears that the Foot Guards continue to enjoy the exemption from this disease which was pointed out in a former Report, and attributed rather to their ordinary drink being beer than to any remarkable habits of temperance. The Household Cavalry, Royal Engineers, and Depôt Battalions, on the other hand, considerably exceed the average. The numbers of the former are too small to warrant any decided conclusion from the returns of one year, and the high ratio in the Depôt Battalions may probably with justice be attributed to the number of old soldiers, who have, in the course of their colonial service, acquired habits of tippling, which even military discipline is insufficient to restrain.

DISEASES OF THE CIRCULATORY SYSTEM have been the cause of 58 deaths, principally from disease of the heart and aneurism.

DISEASES OF THE RESPIRATORY SYSTEM show a marked reduction in prevalence compared with the former average. In the Depot Battalions alone has the mortality been nearly equal to the average of the Infantry for the period 1837-46, and this has very probably arisen from the deaths of men sent home from the service companies in impaired health. Every care has been taken not to include invalids in the abstracts, but it has been impossible to separate men who, on their arrival in this country have been sent to do duty with the Depôt Companies, and who have subsequently died there of disease contracted abroad.

DISEASES OF THE DIGESTIVE SYSTEM have not been the source of much sickness or mortality; compared with the previous period, they have been slightly more prevalent in the Artillery, but not to such an extent as to require detailed notice.

The other orders of local diseases do not seem to call for observation, with the exception of those of the INTEGUMENTARY SYSTEM, which have prevailed to the extent of 136 per 1,000, the principal affections being boils, abscesses, and ulcers. The Household Cavalry and Foot Guards are the only troops among whom the admissions by these diseases were much under the average.

ACCIDENTS.—The admissions into hospital under this head, as might be anticipated, have been considerably lower in the Infantry Corps than in the Cavalry and Ordnance, but the mortality has been very similar in them all, except the Household Cavalry and Military Train, in which there have been no fatal accidents. As compared with the previous period, there has been very little difference in the admissions, except in the Cavalry, in which a considerable reduction has taken place. The most common cause of death has been drowning, by which 26 men lost their lives in 1859. Four were killed by railway accidents, of whom one was a Guardsman, two in Infantry Regiments, and one of a Depôt Battalion.

Suicide.—Twenty cases of suicide were reported in 1859, four in the Cavalry, four in the Artillery, one in the Foot Guards, three in Infantry Regiments, and eight in the Depôt Battalions. The mode in which the deed was committed is not stated in six instances. Of the others, one drowned himself, one hanged himself; eight made use of firearms, two of razors, and two of poison. The poisons used were, prussic acid by a corporal of the Rifle Brigade, and cyanide of potassium by a serjeant of Artillery, who had been in the habit of employing it in photography. It is possible that some of the men returned as "found drowned," may have destroyed themselves, but where there has been no evidence to that effect, their deaths have of course been entered as accidental. The results correspond closely with those formerly obtained, the cases of self-destruction being more numerous in proportion to the strength in the Dragoon Guards and Dragoons than in the Infantry and Foot Guards, while the Artillery and Depôt Battalions hold an intermediate place. The Household Cavalry and Engineers have returned no deaths under this head.

CORPORAL PUNISHMENT has not been inflicted in the Life Guards or Royal Engineers. In the former, it is rendered unnecessary by the facility with which the commanding officers are able to get rid of men whose conduct is bringing disgrace on the regiment. In the latter, perhaps the constant occupation and the higher pay of the men, may account for their exemption from crimes which would subject them to it. In the other arms of the service it has varied from 1·68, in the Foot Guards, to 18·43 in the Military Train. The high ratio in the latter probably arose from the circumstances under which the Corps was raised, immediately after the Crimean War. But in all there is an increase upon the

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former average, as will be seen by the following comparison:—

Annual ratio per 1,000 in—	Dragoon Guards and Dragoons.	Royal Artillery.	Military Train.	Foot Guards.	Infantry.	Depôt Battalions.
1859	4·96	7·13	18·43	1·68	5·45	6·95
1837-46	3·36	4·64	..	1·	4·80	..

In confirmation of the preceding remarks regarding the Household Cavalry, it may be stated that in 1859 six men were discharged for "bad conduct;" twelve, "the regiment having no further occasion for their services;" and two, "the regiment being over the establishment." Unfortunately a similar process of elimination cannot be applied to the other branches of the service.

DISEASES NOT STATED.—The admissions under this head were all recorded as "Observatio;" but the result of this observation was omitted to be stated. In consequence of the extent to which this term was employed, the necessary steps have been taken to suppress its use altogether, and it is hoped that in future the number of cases returned without the disease being specified will be reduced to a very small fraction.

MILITIA.

During the year 1859 there was a considerable force of the Embodied Militia employed throughout the United Kingdom; but as these regiments, in very many instances, have included in their medical returns only the deaths in hospital, and did not furnish to the War Office the annual nominal returns from which the deaths out of hospital could have been ascertained and the total mortality checked, it was deemed advisable to confine the remarks in the preceding pages to the troops composing the regular army. As it may be interesting, however, to compare the relative prevalence of the various classes of diseases in the Militia and Line, the following table is submitted, showing the admissions into hospital, and deaths among such of the *nited ingdom.*

Militia Regiments as remained embodied throughout the whole of the year :—

MILITIA, 1859.—Strength, 19,048.

			Annual ratio per 1,000 of mean strength			
			Militia		Infantry Regiments	
	Admitted	Died	Admitted	Died	Admitted	Died
Class I.						
1. Miasmatic diseases	3,181	23	167·	1·21	168.1	1·12
2. Enthetic „	7,271	2	381·7	·11	399·4	..
3. Dietic „	13	..	·7	..	1·2	..
4. Parasitic „	561	..	29·5	..	27·2	..
Class II.						
1. Diathetic diseases	58	1	3·	·05	2·	·10
2. Tubercular „	136	27	7·1	1·41	12·7	2·55
Class III. Diseases of the—						
1. Nervous system	250	11	13·1	·58	11·3	·51
2. Circulatory „	109	10	5·7	·53	7·	·66
3. Respiratory „	1,934	18	101·5	·95	94·3	1·12
4. Digestive „	496	7	26·	·37	28·4	·41
5. Urinary „	10	4	·5	·22	1·4	·15
6. Reproductive „	20	..	1·1	..	1·	..
7. Locomotive „	15	1	·8	·05	2·3	·05
8. Integumentary „	2,087	1	109·6	·05	128·1	..
Class IV.						
4. Diseases of Nutrition	..	..	..	..	2·5	..
Class V.						
1. Accidents	1,187	10	62·3	·53	60·6	·77
3. Homicide	..	1	..	·05	..	..
4. Suicide	..	3	..	·16	·1	·15
6. Corporal Punishment	13	..	·7	..	5·4	..
Class VI.						
Diseases not stated	142	..	7·5	..	11·	..
Total	17,483	119	917·8	6·27	964·	7·59

This table shows a striking similarity in the results for the two classes of troops. The only groups which seem to call for remark are the tubercular diseases and diseases of the integumentary system. The lower ratio of the former, in the Militia, may probably be the result of their shorter service, as, at the end of five years, if the regiment remain embodied so long, men of impaired health and constitution can be got rid of on the termination of the period for which they had engaged to serve. The Militia, also, have not been so long subject to the deteriorating influences by which the health of soldiers appears to be affected, and some of the deaths by consumption having occurred on furlough may not have been included in the medical returns.

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RE-VACCINATION.

In 1858, in consequence of a number of cases of small-pox having occurred in the army, particularly in India, among persons who had, to all appearance, been previously satisfactorily vaccinated, a departmental order was issued that in future every recruit should, on joining his regiment, be vaccinated, even if he should be found to have marks of small-pox or of previous vaccination, and a monthly return of the results be forwarded to the Director-General. Under these orders, also, a number of soldiers, in whom the marks of vaccination were not deemed satisfactory, were vaccinated, and the results were kept separate from those of the recruits. As the returns began to be furnished in October, 1858, we have included the results of the last three months of that year with those of 1859, with a view to render available all the information upon this very important subject. In Abstract No. IV of Appendix, will be found detailed the numbers of soldiers and recruits re-vaccinated, both in the regular troops serving at home, and in the Militia, with the results. The following table shows the degree of success which attended the operation in 1,000 cases in each of four different categories, together with the general result upon all the men vaccinated:—

Army exclusive of Militia.	Total Number Vaccinated.	Results.	In those who bore marks of previous Small-pox.	In those who bore good marks of previous Vaccination.	In those who bore doubtful marks of previous Vaccination.	In those who bore no marks of previous Vaccination or Small-pox.	Total.
Soldiers, not Recruits	4,403	A perfect vaccine pustule ..	414·50	423·50	294·12	488·96	413·13
		A modified do. ..	200·74	179·69	363·44	167·19	201·23
		A failure in ..	384·76	396·81	342·44	343·85	385·64
		Total ..	1000·	1000·	1000·	1000·	1000·
Recruits ..	21,686	A perfect vaccine pustule ..	350·06	388·71	427·61	536·64	398·37
		A modified do.	187·09	221·16	251·93	206·06	217·33
		A failure in ..	462·85	390·13	320·46	257·30	384·30
		Total ..	1000·	1000·	1000·	1000·	1000·

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Embodied Militia.	Total Number Vaccinated.	Results.	In those who bore marks of previous Small-pox.	In those who bore good marks of previous Vaccination.	In those who bore doubtful marks of previous Vaccination.	In those who bore no mark of previous Vaccination or Small-pox.	Total.
Soldiers, not Recruits	1,598	A perfect vaccine pustule ..	327·07	294·57	612·12	451·85	346·06
		A modified do. ..	191·73	236·44	193·94	192·59	220·90
		A failure in ..	481·20	468·99	193·94	355·56	433·04
		Total ..	1000·	1000·	1000·	1000·	1000·
Recruits ..	4,823	A perfect vaccine pustule ..	351·14	295·00	415·18	585·03	326·97
		A modified do. ..	212·28	248·59	174·11	105·45	230·77
		A failure in ..	436·58	256·41	410·71	309·52	442·26
		Total ..	1000·	1000·	1000·	1000·	1000·

The practice of re-vaccination has been adopted in most of the continental armies for many years, and the results in some of them have been published by Mr. Simon, in his report on vaccination, made to the General Board of Health in 1858. The following table shows the results in the Wirtemburg, Bavarian, and Prussian armies, compared with the preceding:—

	Number of Re-vaccinations.	Results in 1,000 Re-Vaccinations.		
		Perfect Success.	Modified Success.	Failures.
Wirtemburg	14,384	340·2	248·3	411·5
Bavarian	46,023	347·3	220·6	432·
Prussian (1836-40)	216,426	456·3	215·0	328·7
British (Recruits)	21,686	346·1	220·9	433·

The returns of the Wirtemburg army alone have been published with the same detailed information as given in the Abstract in the Appendix, and the results are therefore submitted, for the sake of comparison with those on the preceding page.

Degree of Success of Re-Vaccination.	Of Cases with normal cicatrices of Vaccination there were 7,845; and among these the results per 1,000 were	Of Cases with defective cicatrices of Vaccination there were 3,545; and among these the results per 1,000 were	Of Cases with no cicatrices of Vaccination, or Small-pox, there were 2,025, and among these the results per 1,000 were	Of Cases bearing marks of previous Small-pox there were 266, and among these the results per 1,000 were
Perfect	310·4	280·7	337·3	319·5
Modified	280·5	259·	191·1	248·1
None	409·2	460·4	471·6	432·3

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The deductions to be drawn from the preceding facts are so clearly stated by Mr. Simon, that we shall content ourselves with extracting them from his Report :—

"Is it then a legitimate inference from these figures, that if the same soldiers had been exposed to an atmosphere of small-pox infection, every third man would have caught the disease? Certainly not. Inoculation of lymph (whether vaccine or variolous) is, so to speak, a finer, and more delicate test of susceptibility to the small-pox poison than is the breathing of an infected atmosphere; so that many persons, when the lymph of cow-pox or small-pox is inserted in their skin, will give, locally at least, evidences of susceptibility, which no atmospheric infection would have elicited from them. And of this perhaps there can be no more ready illustration than by noticing (either in another part of the annexed table, or on a still larger scale in a subsequent table, which represents the re-vaccinations at Kasan) that persons who bore marks of previous small-pox were, in at least equal proportion with previously vaccinated persons, capable of producing perfect vaccine vesicles; and probably they too, if tested with variolous matter, would have shown at the inoculated part, similar signs of susceptibility: whereas, notoriously, of persons who have once had small-pox, not nearly one-third becomes afterwards capable of contracting small-pox by frequenting the neighbourhood of the sick.

"For this reason (greatly corroborated by what had already in every-day practice been observed of the immunity of once-vaccinated persons) it was evidently impossible to argue that all who on re-vaccination yielded perfect vaccine vesicles would, on ordinary exposure to small-pox infection, have become infected with small-pox. On the other hand, there could be little reason to doubt that they would have been distinctively *the endangered class*. Not that all, or nearly all of them would have suffered, but that, from among them, more than from among other vaccinated persons, the occasional sufferers by small-pox would have come." (p. 34.)

In proof of the practical value of re-vaccination, Mr. Simon states, on the authority of Professor Heim, that in Wirtemburg—

"During the five years, 1833-7, though small-pox infection had been sixteen times imported into different regiments of the army, there had ensued among the 14,384 re-vaccinated soldiers, only—in the person of one whose re-vaccination two years before had been followed by 'modified success'—a single instance of varioloid." (p. 35.)

In the Prussian army:—

"During the ten years preceding 1831, cases of post-vaccinal small-pox were increasing in number and fatality; attacks were counted annually by many hundreds, and within the three years, 1831-3, there had occurred no fewer than 312 deaths by small-pox. For the last 20 years the Prussian army has represented an almost entirely re-vaccinated population. And what has been the contrast? 104 annual deaths by small-pox was the last experience of the former system; 2 annual deaths by small-pox has been the average for the re-vaccinated army. Analysing, moreover, the 40 fatal cases of small-pox which, during the last 20 years have occurred in the Prussian army, we find that only four of the number were persons who (it is said) had been successfully re-vaccinated."

"From 1843, re-vaccination has been compulsory in the Bavarian army; and from that date to the present time (we are told) neither a single death by small-pox, nor even a single case of unmodified small-pox, has occurred in that population. For the last 21 years, re-vaccination has been general in the Danish army, and for the last 13 years in the Danish navy; and these two populations (we are informed) have almost entirely escaped contagion

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during several epidemics of small-pox. The practice of Sweden has been similar, and its results also satisfactory." (p. 36.)

The practice has not been sufficiently long established in the British army to enable its effects to be thus tested, but these details relating to other armies are sufficient to show the practical importance of the measure, and to lead us to anticipate from its adoption a similar reduction in the prevalence and mortality of small-pox.

In October, 1859, erysipelas followed the operation of re-vaccination in four cases in the Depôt Battalion at Parkhurst, Isle of Wight, and in one of these sloughing to such an extent occurred as to render amputation close to the shoulder-joint necessary. There was at the time a considerable amount of typhoid fever and erysipelas among the inhabitants of Newport, and several cases had occurred in the barracks. Re-vaccination, and indeed all other surgical operations, were consequently suspended, but unfortunately not till after these cases had occurred. These are the only accidents which have been reported in connection with upwards of 32,000 cases of re-vaccination, of which the results are given in the preceding tables.

Section II.

On the Extent of Invaliding.

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In consequence of difficulties arising from the changes which have been made in the returns, we are unable to specify the diseases on account of which the invalids from regiments serving at home were discharged the service. The following table, however, compiled from the War Office Returns, shows the number discharged from the different arms in the course of the year on account of disability:—

	Household Cavalry. Strength, 1,213.		Dragoon Guards and Dragoons. Strength, 8,059.		Foot Guards. Strength, 5,939.		Infantry Regiments. Strength 15,173.*	
	Nos. invalided.	Ratio per 1,000 of strength.	Nos. invalided.	Ratio per 1,000 of strength.	Nos. invalided.	Ratio per 1,000 of strength.	Nos. invalided.	Ratio per 1,000 of strength.
Under 21 years' service in Infantry, or 24 in Cavalry	9	7·42	118	14·64	118	19·87	158	10·41
Above 21 or 24 years	7	5·77	7	·87	60	10·10	20	1·32

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* The strength here stated does not agree with that on p. 9, because it has been found necessary to omit several regiments in consequence of the return of the ages of the men serving in them not having been received at the War Office.

United Kingdom.

Invaliding.

As it is customary to grant discharges for almost nominal disabilities to soldiers who have completed twenty-one years in infantry, or twenty-four in cavalry, the numbers discharged under these periods of service can alone be taken as indicating an amount of disease involving unfitness for military duty. If these results be compared with the proportion discharged as invalids under 21 or 24 years' service, in the ten years 1837-46, they will be found lower in all except the Foot Guards:—

	Annual ratio per 1,000 invalided under 21 or 24 years' service.	
	1859.	1837–46.
Household Cavalry	7·42	14·73
Dragoon Guards and Dragoons	14·64	19·87
Foot Guards	19·87	17·17
Infantry Regiments	10·41	Not stated.

Thus it will be seen, that in the Foot Guards there has been an increase of 2½, but in the Cavalry, a decrease of 5 per 1,000. The previous average of the Infantry cannot be given, but the ratio, in 1859, was under that of the Cavalry, and very little above the Life Guards. We hope to be able, in next year's report, to specify the diseases by which the disability has been caused.

Section III.

On the Number constantly Sick in Hospital of the Troops serving in the United Kingdom.

Mean Sick.

In Abstract No. II of Appendix, the average daily sick in hospital will be found as taken from the Annual Sick Reports. From the data thus furnished, and the tables showing the strength and admissions into hospital, the following table has been compiled:—

	Household Cavalry.	Dragoon Guards and Dragoons.	Military Train.	Foot Guards.	Infantry Regiments.
Mean daily sick per 1,000 of strength..	28·70	51·13	71·82	51·76	50·91
	days.	days.	days.	days.	days.
Average sickness to each man in the course of the year..	10·47	18·66	26·21	18·89	18·58
Average duration of each case	19·46	19·02	20·75	23·87	19·28

United Kingdom.

Mean sick.

This shows a remarkable identity in the mean sick, and in the average sickness in the course of the year to each man in the Cavalry, Foot Guards and Infantry, while there is a great exemption in the Household Cavalry, and excess in the Military Train—the former, probably due to the very small amount of venereal among them, and the latter, perhaps to exceptional circumstances connected with their very recent embodiment. But, with these differences, it is remarkable that the average time of treatment in hospital should so very closely approximate, the only marked excess being in the Foot Guards, and attributable, probably, to their having a larger proportion of consumption among them.

As compared with the results of the previous period, there is a considerable increase in the mean daily sick, which was estimated at 40 per 1,000 in the Cavalry, and 42 per 1,000 in the Guards; but it is not improbable that the difference may be, in part at least, attributable to the records of the average sick being kept with more accuracy.

Section IV.

On the Influence of Age on the Mortality of Troops serving in the United Kingdom.

Influence of age.

The following table, compiled from Abstract No. III of Appendix, shows the mortality, at different ages, in the various arms, compared with what occurs in the civil population at the same periods of life :—

United Kingdom.

Influence of age.

Annual ratio of Deaths per 1,000 Living at the following Ages:—

		Under 20.		20—24.		25—29.		30—34.		35—39.		40 and upwards.		Total.	
		1859	1837–46	1859	1837–46	1859	1837–46	1859	1837–46	1859	1837–46	1859	1837–46	1859	1837–46
Household Cavalry		..	7·5	8·38	11·7	6·85	10·3	9·05	13·3	16·18	8·4	15·04	13·4	8·26	11·1
Dragoon Guards and Dragoons ..		5·07	8·1	4·	11·8	12·96	14·3	15·	14·6	15·86	15·3	34·48	18·3	7·87	13·5
Military Train		..	..	7·66	..	..	..	21·27	..	37·04	..	..	..	5·45	..
Foot Guards		7·92	11·1	7·34	21·6	7·80	21·1	12·07	19·5	26·47	22·4	9·71	26·2	9·04	20·4
Infantry Regiments		5·82	13·1	7·21	17·8	7·80	19·8	11·97	19·8	18·31	21·	15·50	23·4	8·02	17·8
Depot Battalions		6·31	..	10·13	..	12·39	..	20·11	..	37·97	..	44·78	..	13·52	..
Average of preceding, exclusive of Depôt Battalions		5·43	..	6·28	..	8·64	..	12·57	..	19·64	..	21·21	..	..	..
Civil Male Population	England & Wales generally	7·41*	..	8·42	..	9·21	..	10·23	..	11·63	..	13·55*	..	..	..
	Healthy districts in ditto	5·83*	..	7·30	..	7·93	..	8·36	..	9.	..	9·86*	..	..	..

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* The ratio of mortality of the civil population under 20 has been calculated for the ages 17–19, and that of 40 and upwards for the ages 40–44. The data for England and Wales have been obtained from the Life Table in the 12th Vol. of the Registrar-General's Reports, and for Healthy Districts from Dr. Farr's Life Table, published in the 149th volume of the Philosophical Transactions.

United Kingdom.

Influence of age.

From this table it will be seen, that, with the exception of the Depôt Battalions, the mortality under thirty years of age does not differ greatly from that of the male population of healthy districts. There are some slight irregularities, particularly in the Cavalry, but they are, probably, attributable to the numbers not being sufficient to give a correct average. Above thirty years of age, however, the ratio considerably exceeds that of the civil population, a result which strongly confirms the views already expressed that the marked reduction in the mortality has been, to a great extent, due to the circumstance of there being a large proportion of young soldiers who have not been exposed to the deteriorating influences which affect the army for a sufficient length of time to have succumbed to them. We entertain a strong conviction that the sanitary improvements recently introduced into the Service will do much to prevent such deterioration in future, but it will require the experience of some years to determine whether it is possible to keep the rate of mortality among soldiers in this country as low as that of the civil population of the most healthy districts at corresponding ages.

The high ratio in the Depôt Battalions at all ages above twenty, but more strongly marked still above thirty, is, probably, attributable to the number of men serving in them whose constitutions have been impaired by foreign service, and many of whom have been sent home to the depôt labouring under chronic disease contracted abroad.

II. ON THE HEALTH OF THE TROOPS SERVING IN THE MEDITERRANEAN.

Section I.

Sickness and Mortality.

I.—GIBRALTAR.

Gibraltar.

IN the beginning of the year 1859, the garrison of Gibraltar was composed of Royal Artillery, Royal Engineers, the 2nd Battalions of the 6th, 7th, and 8th, and the 1st Battalion of the 25th, Regiments, and in May it was augmented by the arrival of the 100th Regiment.

The average strength during the year was 5,153; the admissions into hospital were 4,889, and the deaths from all causes 37, being in the ratio of 949 and 7·18 per 1,000 of the strength. But if 3 invalids who died after their return to England be included, the deaths will be increased to 40, or in the ratio of 7·76 per 1,000 of the strength.

If these results be compared with those of the ten years, 1837–46, as shown in the last published volume of Statistical Reports, they afford most satisfactory evidence of the healthy condition of the troops during the past year, the admissions into hospital having then averaged 939, and the deaths from all causes, inclusive of those of invalids who had left the garrison, 13·58 per 1,000. Thus, there has been a marked reduction in the mortality at least, which is almost identical with that of the Infantry regiments serving in the United Kingdom in the same year.

The diseases by which the admissions into hospital were occasioned, and the causes of death, will be found detailed in Abstract No. V of Appendix, of which the following is a classified summary. With a view to facilitate comparison, the Abstract contained in the Appendix to the previous Report* has been re-arranged according to the new classification, and the results are embodied in the following table:—

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* Statistical Report on the Sickness, Mortality, and Invaliding among the Troops serving in the Mediterranean, 1837–46. Presented to Parliament, 1853.

Classes.	Orders.		1859.—Strength 5,152.						1837-46. Average Annual Strength, 3,313.		Infantry at Home, 1859.	
			Admitted into Hospital.	Deaths		, Total Died.	Annual ratio per 1,000 of Strength.		Annual ratio per 1,000 of Strength.		Annual ratio per 1,000.	
				at Gibraltar.	of Invalids.		Ad-mitted.	Died.	Ad-mitted.	Died.	Ad-mitted.	Died.
I.	1	Miasmatic diseases	1,472	20	..	20	285·6	3·88	356·4	3·47	168·1	1·12
	2	Enthetic ”	1,334	..	..	..	258·9	..	78·8	..	399·4	..
	3	Dietic ”	..	2	..	2	..	·39	·2	..	1·2	..
	4	Parasitic ”	52	..	..	..	10·1	..	1·7	..	27·2	..
II.	1	Diathetic ”	38	..	..	..	7·4	..	3·1	·09	2·	·10
	2	Tubercular ”	31	2	3	5	6·	·97	11·	4·89	12·7	2·55
		Diseases of the—										
III.	1	Nervous system	81	1	..	1	15·7	·19	18·6	1·15	11·8	·51
	2	Circulatory ”	54	2	..	2	10·5	·39	4·5	·63	7·	·66
	3	Respiratory ”	350	1	..	1	67·9	·19	125·3	1·08	94·8	1·12
	4	Digestive ”	150	2	..	2	29·1	·39	73·9	·72	28·4	·41
	5	Urinary ”	10	..	..	..	1·9	..	1·4	..	1·4	·15
	6	Reproductive ”	9	..	..	..	1·7	..	1·3	..	1·	..
	7	Locomotive ”	17	..	..	..	3·3	..	·7	..	2·8	·05
	8	Integumentary ”	837	..	..	..	162·5	..	152·6	·21	128·1	..
IV. ..	4	Diseases of Nutrition	3	..	..	..	·6	..	·2	·09	2·5	..
V.	1	Accidents ..	355	1	..	1	68·9	·19	100·9	·82	60·6	·77
	3	Homicide ..	..	..	..	..	..	..	..	·03	..	..
	4	Suicide ..	..	5	..	5	..	·98	..	·30	·1	·15
	5	Execution ..	..	1	..	1	..	·19	..	·06	..	..
	6	Corporal punishment	23	..	..	..	4·5	..	5·2	..	5·4	..
		Diseases not stated	73	..	..	..	14·2	..	2·9	·09	11·	..
		Total	4,889	37	3	40	948·8	7·76	938·7	13·58	964·0	7·59

Gibraltar.

On examining this table, it will be found, that while the proportion of admissions in 1859 has exceeded, to a very trifling extent, the average of the ten years, 1837-46, a remarkable change has taken place in the diseases. If the admissions by those of the enthetic order, consisting entirely of the various forms of venereal, be deducted, the sickness in 1859, compared with the previous average, has been as 690 to 859, being a reduction to the extent of 169 per 1,000 of the strength. Again, in looking to the mortality, we find that the reduction, amounting to upwards of two-fifths of the previous rate, has been chiefly, though not exclusively, in the order of tubercular diseases, the most important of which are pulmonary consumption and spitting of blood.

In the following remarks the principal points of difference will be more fully detailed.

MIASMATIC DISEASES.

	1859.	1837–46.
Annual ratio per 1,000 of Admissions	285·6	356·6
„ „ Deaths	3·88	3·47

There has been a decrease in the admissions by these diseases to the extent of 70 per 1,000, but a slight increase in the mortality. The order, however, comprises such diversity of diseases, that we must subdivide them in order to arrive at correct deductions. With this view the following table has been framed:—

	1859.		Annual ratio per 1,000.			
			1859.		1837–46.	
	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
Eruptive Fevers	19	1	3·68	·19	1·63	..
Paroxysmal Fevers	15	..	2·91	..	5·85	·09
Continued „	554	15	107·51	2·91	75·46	1·87
Dysentery, Diarrhœa, and Cholera	389	4	75·49	·78	145·	1·18
Sore throat	89	..	17·27	..	14·82	..
Ophthalmia	255	..	49·48	..	70·54	..
Rheumatism	143	..	27·75	..	41·26	·06

Eruptive Fevers have exceeded the average in consequence of 15 cases of small-pox having occurred during the last

Gibraltar.

quarter. It appears to have been introduced into the garrison by two seamen, who were sent into hospital on the 23rd of October from H.M.S. "James Watt." In 7 of the 15 cases, the men were attacked while under treatment in hospital for other diseases, and of these one died; the others were admitted from barracks. The Royal Artillery had 2 cases; the 2nd Battalion 8th Regiment, 4, all of them previously in hospital; the 25th Regiment one, and the 100th had 8, of whom 3 were patients in hospital. These men are all stated to have borne marks of previous vaccination, and only two of the cases are reported to have been severe. The disease appears to have spread among the crew of the "James Watt," but the subsequent cases were treated in a hulk set apart for the purpose. The civil population suffered also, but we have no information respecting the progress of the disease among them.

There was only one case of scarlet fever, and that in a soldier who had been attending upon a naval officer who laboured under the disease. Although there were several cases among seamen of the Royal Navy, it did not extend further among the troops.

Paroxysmal Fevers have been considerably below the average, and are so rare as scarcely to require any remark. They were all of the intermittent type, and pretty equally distributed among the various corps. The ratio has been exactly the same as among the Infantry regiments at home.

Continued Fevers have shown a very marked increase, both in prevalence and fatal character, during the year 1859. They do not, however, appear to have assumed the form of an epidemic.

The admissions in the different quarters of the year were, in the first, 94; second, 152; third, 149; fourth, 157. But, as the strength varied considerably, we have reduced these figures to the annual ratio per 1,000 of the strength, and, making the necessary correction for the difference in the number of days in each quarter, have obtained the following results:—

1st Quarter.. ..	84	3rd Quarter.. ..	104
2nd ,, ...	128	4th ,, ...	110

After a careful examination of all the reports, we are unable to attribute the increase in fevers to any other cause than the overcrowding of the barracks. It began in the second quarter of the year, when an augmentation of the garrison had taken place by the arrival of the 100th Regiment and reinforcements to the Royal Artillery, and when

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the space in barracks, already sufficiently limited, was thereby necessarily reduced. The overcrowding was partially obviated by encamping the 25th Regiment on the Isthmus, where it remained till the 3rd of September, and was then relieved by the 76th Regiment. From the topographical reports of the medical officers, it appears that in very few of the barracks did the cubical space per man amount to 500 feet, and in some it was under 400.

The admissions by continued fevers occurred in the following proportion in the different corps:—

Royal Artillery and Engineers	94	per 1,000 of Strength.
2nd Battalion 6th Regiment	127	„ „
2nd „ 7th „	141	„ „
2nd „ 8th „	72	„ „
1st „ 25th „	55	„ „
100th Regiment	194	„ „

It is worthy of remark, as corroborating the opinion above expressed regarding the principal cause of the fever, that the lowest proportion of admissions occurred in the 25th Regiment, which, during four months and a half, comprising the hottest period of the year, was encamped on the Isthmus. The very high relative rate in the 100th Regiment may have been partly owing to its having been very recently raised and the men being unaccustomed to the atmosphere of a crowded barrack.

The prevalence of fever may also have been in some degree attributable to the state of the drains, which, although much improved, are still capable of amelioration, but the limited supply of water upon the rock has always been an obstacle to their being frequently and thoroughly flushed. It has been in continued fevers, dysentery, and diarrhœa, that the excess of admissions by miasmatic diseases in Gibraltar over those among the Infantry at home has taken place.

Dysentery, Diarrhœa, and Cholera have undergone a marked reduction compared with the previous ten years, but the proportion of deaths to cases has been rather higher than formerly.

Sore throat has been slightly in excess of the previous average, but the proportion of admissions to strength is only half that of the Infantry regiments at home.

Ophthalmia is also less prevalent, but still gives rise to a considerable amount of inefficiency. The cases were most numerous in the 2nd Battalion 8th, the 25th, and the 100th Regiments, but no reason for this has been assigned by the medical officers. The form of the disease was conjunctival

Gibraltar. inflammation, generally of a mild character, and yielding easily to the usual remedies.

Rheumatism has diminished by one-third compared with the previous average, but this may probably be explained by the very small number of old soldiers in garrison in 1859, who are most liable to this disease.

Enthetic Diseases.—There has been an enormous increase in these diseases, which have been thrice as numerous as during the previous period, although still much lower than among the Infantry in the United Kingdom.

It is difficult to assign any reason for this except that during 1859, the fleet was more frequently than usual at Gibraltar, and it is believed that the disease was greatly kept up by the sailors. So far as can be ascertained the police regulations respecting prostitutes have neither been relaxed nor inefficiently put in force, but when the admissions by venereal diseases amount to upwards of a fourth of the strength of the garrison, and exhibit such a contrast with the results of former periods, this subject appears to require a searching investigation.

Dietic Diseases.—The two deaths recorded under this order were those of men who died from suffocation while drunk. One of them was found dead in a wine shop in the town, and the other in his barrack room.

Parasitic Diseases.—The apparent increase in this order, is probably owing to cases of itch having formerly been returned under the general term of diseases of the skin, and it having been found impossible to separate them from these affections in remodelling the tables.

Diathetic Diseases have been twice as numerous as formerly, but are the cause of so very little sickness and mortality, as scarcely to require any remark.

Tubercular Diseases.—It is in this order of diseases, formerly the cause of nearly one-third of the mortality of the garrison, that the most important change has taken place; the admissions having amounted in 1859 to only one-half of the former average, and the mortality having fallen from 4·89 to 0·97 per 1,000. During the period now under review, the garrison, with the exception of one regiment, was composed of newly raised battalions, and it may be that the men had not been so long exposed to the deteriorating influences which have hitherto in the army operated in the production of consumption, as to have suffered from them. The increased facilities also for sending home invalids in the mail steamers, which now run weekly, may perhaps account partly for the reduction. But making a liberal allowance for this, there still remains a very marked and satisfactory improvement. *Gibraltar*

The admissions by these diseases have only amounted to half the proportion in the Infantry generally, and the deaths to rather more than half the proportion in the second battalions serving at home.

Of the orders comprised in the class "LOCAL DISEASES," it may be sufficient to observe, that there has been a marked reduction in the mortality, and also in the admissions, with the exception of those of the circulatory, locomotive, and integumentary systems.

Under the head of *delirium tremens*, however, we regret to observe an increase in the admissions, which have amounted to 5 per 1,000 of the strength, while the average of the previous period was only 3·1. Of 26 cases, 14 occurred in the Ordnance Corps, and only 12 in the Regiments of the Line.

ACCIDENTS, VIOLENCE, &c.—There has been a reduction in the admissions by this class, and a very slight increase in the deaths, which have amounted to 1·36 per 1,000, against a former average of 1·21. Five men committed suicide; one cut his throat, and the other four shot themselves. Of the five, four were artillerymen, a fact of some significance, when taken in connection with the excess of *delirium tremens*, above noticed.

In 73 admissions, amounting to 14·2 per 1,000 of the strength, the diseases are not stated. They were mostly entered under the head of "Observation," and the result unfortunately has not been recorded. It is believed that in future this source of error will rarely occur.

II.—MALTA.

The garrison of Malta, in the beginning of 1859, consisted of part of the 6th Brigade of Royal Artillery, two companies of Royal Engineers, the 2nd Battalions of the 3rd and 15th Regiments, the 1st Battalion 21st Regiment, the 4th Battalion Rifle Brigade, and the Royal Malta Fencibles. In the end of February the 2nd Battalion 23rd Regiment joined direct from England, and the 2nd Battalion 22nd in the end of May. *Malta.*

The average strength during the year was 5,310, exclusive of the Royal Malta Fencibles. The admissions into hospital amounted to 6,446, and the deaths from all causes to 96, being in the annual ratio of 1,214 and 18·08 per 1,000

Malta. of the force. But to the deaths must be added 5 of invalids, which increase the mortality to 19·02 per 1,000.

On comparing these results with the average of the ten years, 1837-46, a considerable increase will be found, both in the sickness and in the deaths within the limits of the command, which were formerly only 1,120, and 16·77 per 1,000, but the total mortality of the two periods closely corresponds.

The following table, compiled from Abstract No. V of Appendix, shows the groups of diseases by which the sickness and mortality have been caused in the two periods respectively:—

	1859.—Strength 5,310.						1837-46. Average Annual Strength 2,117.	
	Admitted into Hospital.	Deaths		Total Died.	Annual ratio per 1,000 of Strength.		Annual ratio per 1,000 of Strength.	
		in Malta.	of Invalids.		Admitted.	Died.	Admitted	Died.
I.								
1. Miasmatic diseases	2,960	59	..	59	557·5	11·11	497·7	6·80
2. Enthetic „	793	..	..	..	149·3	..	98·8	..
3. Dietic „	14	..	..	..	2·6	..	·05	·05
4. Parasitic „	85	..	..	..	16·	..	3·6	..
II.								
1. Diathetic „	11	..	..	..	2·1	..	2·4	·09
2. Tubercular „	75	9	3	12	14·1	2·26	13·9	6·38
III. Diseases of the—								
1. Nervous system	93	6	1	7	17·5	1·32	15·4	·85
2. Circulatory „	50	4	1	5	9·4	·94	4·3	·42
3. Respiratory „	481	9	..	9	90·6	1·69	131·1	1·65
4. Digestive „	295	1	..	1	55·6	·19	101·65	1·23
5. Urinary „	6	1	..	1	1·1	·19	1·1	..
6. Reproductive „	6	..	..	..	1·1	..	·3	..
7. Locomotive „	7	..	..	..	1·3	..	1·4	..
8. Integumentary „	1,055	..	..	..	198·7	..	135·6	·14
IV.								
4. Diseases of Nutrition ..	7	..	..	..	1·3	..	·1	·05
V.								
1. Accidents	427	7	..	7	80·4	1·32	99·7	1·51
3. Homicide	..	..	..	..	..	..	..	..
4. Suicide	..	..	..	..	..	..	..	·19
5. Execution	..	..	..	..	..	..	..	..
6. Corporal Punishment ..	20	..	..	..	3·8	..	10·7	..
Diseases not stated	61	..	..	..	11·5	..	2·1	..
Total	6,446	96	5	101	1213·9	19·02	1119·9	19·36

Malta.

This table shows a marked increase in the admissions into hospital by miasmatic and enthetic diseases, and by those of the integumentary system; while there has been a considerable reduction in those of the respiratory and digestive systems. As regards mortality, there has been a great excess in the deaths by miasmatic, but a corresponding decrease in those by tubercular diseases.

We shall now examine, a little more in detail, the various groups by which the admissions and deaths have been occasioned.

1. Miasmatic Diseases.

	1859.	1837–46.
Annual ratio of Admissions per 1,000	564·2	497·7
„ Deaths „	11·11	6·80

With a view to study the particular affections by which the increase, both in admissions and deaths by miasmatic diseases, has been occasioned, we have subdivided the order into groups as in the report upon Gibraltar, with the following results:—

	1859.		Annual ratio per 1,000.			
			1859.		1837–46.	
	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
Eruptive Fevers	1	..	·2	..	1·6	·05
Paroxysmal „	59	..	11·1	..	2·8	·28
Continued „	1,431	47	269·5	8·85	207·3	1·46
Dysentery, Diarrhœa, &c. ..	803	10	151·2	1·88	150·5	2·41
Sore Throat	79	..	14·9	..	17·1	..
Ophthalmia	286	..	53·9	..	65·9	..
Rheumatism	288	2	54·2	·38	42·7	.09

From this it appears that, although there has been a slight increase in paroxysmal fevers and rheumatism, the great difference, both in the number of cases and deaths, has been attributable to fevers of the continued type—the

Malta

excess in 1859 over the previous average amounting to 62 per 1,000 in the admissions, and 7·4 per 1,000 in the deaths. The disease appears to have become more than usually prevalent in the second quarter of the year, to have reached its maximum in the third, but to have caused the greatest number of deaths in the fourth quarter.

The admissions and deaths in each quarter, and the annual ratio of these per 1,000 of the strength, are shown in the following table. The necessary correction has been made in the calculations for the difference in the number of days:—

	1st Quarter.	2nd Quarter.	3rd Quarter.	4th Quarter.
Admissions	70	316	705	340
Deaths	4	3	17	23
Annual ratio per 1,000 { Admitted ..	68·9	245·	468·7	225·5
Annual ratio per 1,000 { Died	3·94	2·33	11·80	15·26

The prevalence and mortality of fever differed greatly in the various corps serving in the island, as will be seen by the following statement of the admissions and deaths per 1,000 of mean strength in each:—

	Admitted with Fever.	Died by Fever.
Royal Artillery	194·	8·50
Royal Engineers	255·2	4·18
2nd Battalion 3rd Regiment	233·2	4·64
2nd " 15th "	245·1	9·08
1st " 21st "	129·7	2·36
2nd " 22nd "	603·9	6·49
2nd " 23rd "	466·2	23·45
4th " Rifle Brigade	309·2	17·32

Thus the admissions were exceedingly numerous in the 22nd and 23rd Regiments, and next to these in the Rifle Brigade; but the mortality was greatest in the 23rd Regiment, Rifle Brigade, 15th Regiment, and Royal Artillery. The only corps which appears to have enjoyed a marked exemption from the disease, was the 1st Battalion 21st Regiment.

The prevalence of fever was at first attributed by the medical officers to the large number of young soldiers who were for the first time exposed to the heat of a

Malta summer; while, in addition to this, the temperature in the third quarter of 1859 was above the average. This view was, to a certain extent, supported by the exemption enjoyed by the only old battalion serving in the island, and by the high proportion of admissions in the 2nd Battalion 22nd Regiment, which arrived from England in the end of May just as the hot weather set in, and also had a detachment under canvas at St. George's Bay, for rifle instruction, during the hottest season, when the men were very much exposed. The quality of the water in the tanks during the dry season, and the overcrowded state of the barracks, are also believed to have contributed to the production of this disease. But it became evident that there was also some local cause in operation to which the great amount, and the aggravated character of the fever in the 23rd Regiment and Rifle Brigade, must be attributed. The former of these corps was quartered in Fort Ricasoli, and the latter in the Lower St. Elmo barracks, till the 26th of September when they exchanged quarters. The local causes to which the fever in them was attributed by the surgeons in charge, are thus described by Dr. Forrest, the principal medical officer:— *Malta.*

"The Royal Artillery occupy the barracks situated on the upper part of Fort St. Elmo, on an elevated position, and freely exposed in all directions. The Rifle Brigade were quartered in the lower part of the same fort; but the barrack which was occupied by them, and subsequently by the 2nd Battalion 23rd Regiment, is almost on the level of the sea, and is completely enclosed on all sides, so that free access of air is impossible. It is, however, fully exposed to the heat of the sun; and, from the nature of its construction, is both badly ventilated and liable to dampness. A small parade ground or courtyard lies in front of the barrack, dividing it from the lofty wall which encloses the upper part of the Fort, and across this courtyard various sewers from privies in the military prison, and from Upper St. Elmo, pass. But its level is so little above that of the sea, that the contents of these sewers cannot flow freely along; they accumulate; the earth in the neighbourhood becomes infiltrated with decaying animal matter, and most offensive gases are produced. Such was the condition of affairs during the summer, and beginning of the autumn, and several cases of typhoid fever occurred, both among the Royal Artillery and Rifle Brigade. About the middle of September, operations were commenced for fitting up gas in the barrack, and trenches were dug for gaspipes in various directions over the parade ground. By the earth being turned up in this way, free escape was afforded to the effluvia from the decomposing matter—the well-known exciting cause of this form of fever—and the usual effects were produced, first, upon the Rifle Brigade and Royal Artillery, and subsequently on the 2nd Battalion of the 23rd Regiment, who, in consequence of their vicinity and continued residence, suffered much more than the others. It is also more than probable that the long protracted heat and absence of rain had considerable effect on the evolution of these effluvia, as after the rain began to fall, and cool weather set in, the admissions ceased."

In addition to this purely local cause, two large sewers, *Malta.* coming from the city of Valetta, open on the rocks above the sea, very near to the western side of the barracks.

The fever, as might have been expected, was of the typhoid type, and of a very fatal character, the deaths amounting to 1 in 28 of all the cases, while in the 23rd Regiment, they were as high as 1 in 20, and in the Rifle Brigade, 1 in 18. On the average of the ten years, 1837-46, continued fever proved fatal to only 1 in 141 cases.

ENTHETIC DISEASES.—The admissions by this order of diseases have been in the ratio of 149 per 1,000 of the strength, being an increase over the former ratio of 50 per 1,000. This has probably been attributable chiefly to the circumstance that the police surveillance of prostitutes was discontinued for some time, but, in consequence of representations made to the Governor, it has been again resumed, and we may hope to find the amount of venereal in consequence reduced. The exemption enjoyed by the troops from venereal, is very striking when compared with its prevalence among the Infantry at home, or even at Gibraltar, as shown in the preceding pages.

DIETIC DISEASES show an apparent increase, but this may be explained by the introduction of intemperance into the nomenclature. Under this head nine cases were admitted which would probably have been formerly entered under the head of fever.

PARASITIC DISEASES also appear to have been more prevalent, but, as already explained, the comparison with the previous period is not strictly accurate, owing to the change in the classification of skin diseases.

DIATHETIC DISEASES have prevailed to exactly the same extent as formerly.

TUBERCULAR DISEASES.—While in the admissions by these diseases a slight increase has taken place, there has been a very marked reduction in the mortality, which has amounted to little more than one-third of the previous average, and has been almost exactly the same as among the Infantry at home. Thus the same improvement in this respect has taken place as at Gibraltar, though not quite so marked, and may probably be attributable to the same causes. There can be little doubt that the increased facilities for sending home invalids when affected with pulmonary disease, must have had some share in this change, for the influence of the climate of Malta on such cases during the hot season is too well known to require comment, and as the invalids arrive in England with the disease in a less advanced stage than formerly, they are more likely to be in a fit state to be discharged the service, or, in some instances, to benefit by change of climate so much as to become again fit for military duty. This view is so far corroborated by the fact that the mortality by consumption among the invalids sent home to be discharged in the ten years, 1837-46, amounted to 2 per 1,000 of the force serving at Malta, while in 1859, the proportion was only 0·57 per 1,000. *Malta.*

DISEASES OF THE NERVOUS SYSTEM have been rather above the average, chiefly from an increase in the cases of epilepsy and inflammation of the ear. *Delirium tremens,* however, has undergone a slight reduction.

DISEASES OF THE RESPIRATORY SYSTEM show a very marked reduction, amounting to 40 per 1,000 of the strength, which has taken place chiefly in bronchitis. Similar satisfactory results have been obtained in regard to

DISEASES OF THE DIGESTIVE ORGANS, the admissions by which have been 46 per 1,000 below the average. The difference is principally in cases of constipation and colic.

DISEASES OF THE INTEGUMENTARY SYSTEM have greatly exceeded the average. About half the increase has been caused by boils and abscesses.

VIOLENT DEATHS from accident have been in nearly the same proportion as formerly. One from compression of the brain was the result of a blow, and one by poison occurred from a soldier drinking, by mistake, a solution of the bichloride of mercury, which had been made for the purpose of browning the barrels of the rifles. No death by suicide was recorded during the year.

ROYAL MALTA FENCIBLES.

In the preceding remarks, we have omitted entirely the Royal Malta Fencibles, because, being natives of the island, and in many respects differently situated from regiments of the line, it might be anticipated that a considerable difference would be found in the rates of sickness and mortality, and in the diseases by which these were caused. During the year 1859, the admissions into hospital in this corps were 378 and the deaths 5, in an average strength of 610, being in the annual ratio of 619·6 and 8·19 per 1,000 of the strength. As the number of old soldiers is considerable in the corps, it is necessary, before making any comparison, to reduce the ratio, as was done in the United

Malta. Kingdom Report, to the proportion which would have occurred had the ages been distributed as in the Dragoon Guards and Dragoons. With this correction, it would only have amounted to 7·11 per 1,000, being 0·76 per 1,000 under that of the Cavalry at home, and 0·11 per 1,000 below the rate affecting the male population at corresponding ages in healthy districts in the United Kingdom.

The diseases by which the admissions into hospital and deaths were occasioned, will be found detailed in Abstract No. V of Appendix, of which the following is a summary:—

	Royal Malta Fencibles.		Annual ratio per 1,000 of Strength.					
Average strength	610		Malta Fencibles.		Line Regiments at Malta.		Infantry at Home.	
Diseases.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
Class I.								
1. Miasmatic diseases ..	109	2	178·6	3·27	557·5	11·11	168·1	1·13
2. Enthetic " ..	33	..	54·2	..	149·3	..	399·4	..
3. Dietic " ..	..	..	..	..	2·6	..	1·2	..
4. Parasitic " ..	2	..	3·3	..	16·	..	27·2	..
Class II.								
1. Diathetic diseases ..	3	..	4·9	..	2·1	..	2·	·1
2. Tubercular " ..	1	1	1·6	1·64	14·1	1·69	12·7	3·55
Class III. Diseases of the—								
1. Nervous system ..	10	..	16·4	..	17·5	1·13	11·3	·51
2. Circulatory " ..	1	..	1·6	..	9·4	·76	7·	·06
3. Respiratory " ..	40	1	65·6	1·64	90·6	1·69	94·3	1·12
4. Digestive " ..	74	1	121·3	1·64	55·6	·19	28·4	·41
5. Urinary " ..	3	..	4·9	..	1·1	·19	1·4	·15
6. Reproductive " ..	..	..	..	..	1·1	..	1·	..
7. Locomotive " ..	..	..	..	..	1·3	..	2·3	·05
8. Integumentary " ..	59	..	96·7	..	198·7	..	128·1	..
Class IV.								
4. Diseases of Nutrition ..	..	..	..	..	1·3	..	2·5	..
Class V.								
1. Accidents	43	..	70·5	..	80·4	1·32	60·6	·77
3. Homicide	..	..	..	..	..	..	..	..
4. Suicide	..	..	..	..	..	..	·1	·15
6. Corporal Punishment ..	..	..	..	..	3·8	..	5·4	..
Diseases not stated ..	..	..	..	..	11·5	..	11·	..
Total..	378	5	619·6	8·19	1213·9	18·08	964·	7·59

An examination of this table shows, that the lower rate of admissions in the Malta Fencibles, compared with the Infantry serving at home, is entirely attributable to venereal;

Malta.

the difference in the two classes of troops by these diseases alone, amounting to 345 per 1,000 of the strength. Even compared with the Infantry serving at Malta, the proportion of admissions by venereal in the Fencibles, amounts to only one-third; a result doubtless to be accounted for by the much larger proportion of married men in the corps. Their exemption from tubercular diseases, is also worthy of notice, for although the mortality is the same as in the Line regiments, the admissions are much less numerous; they also appear to be less subject to diseases of the respiratory organs. The only class from which they suffer more than the other troops, is that of diseases of the digestive organs. But considerable caution must be used in drawing deductions on these points, as the numbers under observation are too few, and the period is too limited, to give a fair average. It may be sufficient to observe, that, after deducting venereal, the amount of sickness corresponds closely with that among the Infantry serving at home, and that the mortality is rather under the average of the healthiest districts in England.

III.—Ionian Islands.

Ionian Islands.

The military force in these Islands, on the 1st of January, 1859, consisted of three companies of Royal Artillery and one of Royal Engineers, the 2nd Battalions of the 4th and 9th Regiments, and the 1st Battalion of the 14th. In the beginning of June, the 2nd Battalion of the 2nd Regiment arrived from England as an augmentation to the force.

The admissions into hospital amounted to 3,225, and the deaths, from all causes, to 43, in an average strength of 3,660, being in the ratio of 881 and 11·75 per 1,000; but three deaths of invalids must be added, which raise the mortality to 12·57 per 1,000. These results are very satisfactory, as they show a lower ratio of sickness and mortality than has been experienced in these Islands during any of the thirty years included in previous reports, with the single exception of 1845, when the deaths were only 10·6 per 1,000, exclusive of those among invalids.

The diseases and causes of death will be found fully detailed in Abstract No. V of Appendix, of which the following table is a classified summary, with the addition of the average ratios of the ten years 1837–46, for the purpose of comparison.

Ionian Islands.

	1859.—Strength, 3,660.						1837-46. Average Annual Strength, 2,984	
	Admitted into Hospital.	Deaths		Total Died.	Annual Ratio per 1,000 of Strength.		Annual Ratio per 1,000 of Strength.	
		In Ionian Islands.	Of Invalids.		Admitted.	Died.	Admitted.	Died.
Class I.								
1. Miasmatic diseases ..	1,357	26	..	26	370·8	7·11	521·5	7·12
2. Enthetic „ ..	508	..	..	..	138·8	..	85·5	·04
3. Dietic .. „ ..	1	..	..	..	·3	..	·1	·16
4. Parasitic „ ..	21	..	..	..	5·7	..	2·7	·04
Class II.								
1. Diathetic diseases ..	8	1	..	1	2·2	·27	4·6	·08
2. Tubercular „ ..	28	3	1	4	7·6	1·09	10·3	4·39
Class III. Diseases of the—								
1. Nervous system ..	53	5	..	5	14·5	1·37	15·0	1·56
2. Circulatory „ ..	14	2	1	3	3·8	·82	2·4	·26
3. Respiratory „ ..	232	..	..	..	63·4	..	127·1	1·96
4. Digestive „ ..	140	3	..	3	38·2	·82	63·2	1·02
5. Urinary „ ..	6	..	..	..	1·6	..	2·6	·04
6. Reproductive „ ..	2	..	..	..	·5	..	·5	
7. Locomotive „ ..	6	..	1	1	1·6	·27	·5	
8. Integumentary „ ..	566	..	..	..	154·7	..	179·9	
Class IV.								
4. Diseases of Nutrition	29	..	..	..	7·9	..	·1	
Class. V.								
1. Accidents	225	3	..	3	61·5	·82	110·0	·83
3. Homicide	..	..	..	..	..	..	..	·08
4. Suicide	..	..	..	..	..	..	..	·16
5. Execution	..	..	..	..	..	..	..	·04
6. Corporal Punishment .	13	..	..	..	3·6	..	9·1	
Diseases not stated ..	16	..	..	..	4·4	..	3·6	·16
Total	3,225	43	3	46	881·1	12·57	1138·7	17·94

A comparison of the results of the two periods shows a diminution, in the admissions, of 258, and in the mortality, of 5·37 per 1,000 of the strength.

We shall now proceed to analyse the classes of diseases in which this marked improvement has been observed.

MIASMATIC DISEASES.

	1859.	1837-46.
Admissions per 1,000 of strength	370·8	521·5
Deaths „ „	7·11	7·12

Ionian Islands.

A reduction in the prevalence of these diseases has taken place to the extent of nearly 151 per 1,000 of the strength, but the mortality remains exactly as before.

Pursuing the same course as in the other reports, we find the admissions and deaths to have been by—

	1859.		Annual Ratio per 1,000.			
			1859.		1837-46.	
	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
Eruptive Fevers	83	2	22·7	·55	·9	·04
Paroxysmal „	68	..	18·6	..	79·6	2·33
Continued „	613	23	167·5	6·20	190·6	3·47
Dysentery, Diarrhœa, and Cholera	214	1	58·5	·27	114·7	1·03
Sore Throat	80	..	21·8	..	18·8	0·4
Ophthalmia	191	..	52·2	..	93·7	
Rheumatism	105	..	28·7	..	35·3	·04

Eruptive Fevers have considerably exceeded the average, owing to the prevalence of scarlet fever in the form of an epidemic in the 2nd Battalion 9th Regiment, at Corfu. It broke out in the third quarter of the year, and did not cease till the regiment was moved from Fort Neuf Barracks. The disease was of a typhoid character, owing, probably, to local causes, which will be noticed when speaking of continued fevers. It was confined to the 9th Regiment, in which 78 cases occurred, with 2 deaths, while there were only three cases among the rest of the troops.

Paroxysmal Fevers have undergone a very marked reduction compared with previous periods, and have not been the cause of any deaths.

Continued Fevers, though in a slight degree less prevalent, have proved fatal to nearly double the usual amount. The whole of the deaths but two occurred in Corfu, where fever of a severe typhoid character prevailed to a great extent. Its relative prevalence in each quarter of the year, in that island, is shown in the following table :—

CORFU.	Jan.—March.	April—June.	July—Oct.	Nov.—Dec.
Mean strength	2,100	2,435	3,054	3,060
Admissions by continued fever.	42	113	218	50
Deaths .. by continued fever.	5	4	9	3
Annual ratio per 1,000 Admitted ..	81·10	186·10	283·20	64·80
Annual ratio per 1,000 Died	9·66	6·59	11·69	3·89

Thus, it appears that the prevalence and mortality of continued fevers were greatest in the third quarter—a result

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in accordance with previous experience in the Mediterranean. They did not affect all the corps in the island alike, as will be seen by the following statement of the annual ratio per 1,000 of strength admitted and died in each. The periods during which the regiments were in Corfu are stated, and the necessary correction in the strength has been made with regard to such as were only for a portion of the year under observation :—

	Period.	Annual ratio per 1,000 strength.	
		Admitted with continued fever.	Died by continued fever.
Royal Artillery and Royal Engineers.	Jan. to Dec. inclusive	29·8	5·60
2nd Battalion 2nd Regiment ..	Jan. to Sept. „	166·9	5·06
2nd Battalion 4th Regiment ..	June to Dec. „	314·1	15·90
2nd Battalion 9th Regiment ..	Jan. to Dec. „	189·0	10·10
1st Battalion 14th Regiment ..	Oct. to Dec. „	88·0	..

Leaving out of consideration the 1st Battalion 14th Regiment, which was stationed in Corfu during the last quarter of the year only, when fever does not generally prevail to any great extent, the mortality by this disease appears to have exceeded the usual average in all the corps, but to have varied considerably in each. The Ordnance have enjoyed a marked exemption as regards prevalence, which may perhaps be attributable, in some degree, to their special duties and organization. It is worthy of remark, that during the summer months, the 2nd Battalion 2nd Regiment had two companies under canvas at Fort Abraham, and thus reduced the number in barracks, and removed one of the alleged causes of fever in this island. The 2nd Battalion 4th arrived from England just at the commencement of the hot weather, and probably, as in the case of the 2nd Battalion 22nd Regiment at Malta, the high ratio of admissions may be partly attributable to the exposure of the young soldiers composing it, to the great, and to them unusual, heat of a Mediterranean summer. While a considerable number of the admissions were doubtless cases of ephemeral fever from this cause, the high ratio of mortality shows, that disease of a much more formidable character prevailed. Only 56 cases and 9 deaths are returned under the head of typhoid fever; but this is probably due to the circumstance, that in the old returns, there was no distinct heading for this type, which was therefore usually returned under the general term of continued fever. There was a great tendency in all the cases to assume a typhoid character, and this was the type which occasioned the very high rate of mortality.

The causes assigned for the unusual prevalence of fever, were the great heat of the summer, the overcrowding of the barrack rooms, particularly after the arrival of the 2nd Battalion 4th Regiment in the beginning of June, and the very unsatisfactory sanitary condition of the town.

To the last of these causes may also be ascribed the peculiar form which the fever assumed, and also that of the cases of scarlet fever in the 9th Regiment, to which allusion has already been made.

With reference to the very defective sanitary condition of the town, Dr. Beatson, the Principal Medical Officer of the Command in 1859, remarks:—

> "The sewerage is most defective, and the sewage, when it reaches the tideless sea, renders it almost putrescent. The water, for instance, under Fort Neuf, receives a large amount of the sewage of the town of Corfu, and if any one approaches it in a boat, and thus stirs up the stagnant, sickening fluid, the stench is perfectly overpowering, so much so, that I feel certain the health of the troops in Lower Fort Neuf can only be preserved by the most careful attention to personal cleanliness, to the avoidance of overcrowding, and good wholesome diet. Were any of these circumstances less favourable than they are, there are around them the seeds of disease, which only require neglect of the above precautions to develop themselves rapidly and severely. Situated as the town is, exactly between the Citadel and Fort Neuf, both must in some degree suffer, but the former certainly in a less degree than the latter. There is, besides, at the north-west angle of the glacis at Fort Neuf, a general slaughter-house for the whole town of Corfu, the offal of which is unceremoniously thrown into the tideless harbour, an evil which would be greater, were it not the fact, that many parts of the animals are here sold and used which elsewhere are generally thrown away; but still when fifty cattle are sometimes killed in a day, it is a nuisance requiring supervision."

Dr. Beatson also complains of want of due attention to cleanliness in and around the barrack occupied by the 9th Regiment (Fort Neuf), to which he partly attributes the high ratio of fever.

Dysentery, Diarrhœa, and Cholera prevailed to about half their former extent and caused only one death. There has also been a change in the relative proportion of dysentery and diarrhœa; the former being now scarcely one-tenth of the whole, while previously it was more than one-fifth.

Ophthalmia shows a very marked reduction, which would have been still greater, but for the prevalence of the disease in the 1st Battalion 14th Regiment, which had suffered to a great extent from it in Malta. Of 190 admissions into hospital, 120 were from this regiment alone.

ENTHETIC DISEASES.—There has been an increase in the admissions by these diseases, which comprise all the forms of venereal, to the extent of 53 per 1,000 of the strength; but we have no information as to whether this has arisen

Ionian Islands.

from any change in police regulations, or merely from the garrisons being composed chiefly of newly raised battalions, with a smaller proportion than usual of old and married soldiers, who would be less liable to contract the disease.

TUBERCULAR DISEASES, exhibit the same satisfactory results as in Gibraltar and Malta, the deaths being in the ratio of 3·30 per 1,000 below the average. The same causes to which we before alluded, have been in operation here, and, although it is difficult to assign an exact relative value to them, the results are in the highest degree satisfactory.

LOCAL DISEASES.—These appear scarcely to require comment, except to notice the great reduction in the admissions by those of the respiratory and digestive systems, which have prevailed to scarcely half the usual extent.

VIOLENT DEATHS.—The deaths from accidents have reached the usual average, omitting those from homicide, suicide, and execution, of which there were no instances in 1859. One man was killed by a shark whilst bathing at Corfu.

Although the number of men quartered in each of the islands, with the exception of Corfu and Cephalonia, is so small as to render the results liable to great fluctuations, we have prepared the following statement, showing the admissions into hospital and deaths in 1859 compared with the average of 1837-46:—

	1859.			Annual ratio per 1,000 of mean Strength.			
				1859.		1837–46.	
	Average strength.	Admitted into hospital.	Deaths	Admitted.	Died.	Admitted.	Died.
Corfu and Vido..	2,663	2,294	41	861	15·37	1,085	15·8
Paxo	37	37	..	1,000	..	973	24·
Santa Maura ..	106	96	..	905	..	1,307	19·9
Cephalonia ..	484	416	..	860	..	1,114	15·
Zante	305	359	2	1,179	6·60	1,494	19·6
Ithaca	33	8	..	242	..	1,143	21·
Cerigo	32	16	..	500	..	1,153	19·6

Thus, in all the islands there has been a great reduction in the sickness and mortality in 1859, compared with the previous period; but it must not be forgotten that these have always been subject to considerable fluctuations. The following table shows the principal groups of diseases, but, owing to the very limited numbers of the force, it has not been deemed necessary to include Paxo, Santa Maura, Ithaca, and Cerigo in the table:—

Ionian Islands.

Class.	Order.	Stations	Corfu.				Cephalonia.				Zante.			
		Average Strength.. ..	2,663.				484				305			
		Diseases.	Admitted.	Died.	Annual ratio per 1,000.		Admitted.	Died.	Annual ratio per 1,000.		Admitted.	Died.	Annual ratio per 1,000.	
					Admitted.	Died.			Admitted.	Died.			Admitted.	Died.
I.	1	Miasmatic diseases ..	960	24	360·5	9·01	222	..	458·7	..	94	2	308·2	6·6
	2	Enthetic "	341	..	128	..	61	..	126·0	..	101	..	333·1	..
	3	Dietic "	1	..	·4	..	..	..	..	..	..	..	..	..
	4	Parasitic "	14	..	5·3	..	4	..	8·3	..	3	..	9·8	..
II.	1	Diathetic "	6	1	2·2	·37	2	..	4·1	..	..	..	..	..
	2	Tubercular "	23	3	8·6	1·12	1	..	2·1	..	2	..	6·6	..
		Diseases of the—												
III.	1	Nervous system ..	37	5	13·9	1·88	6	..	12·4	..	8	..	26·2	..
	2	Circulatory "	15	2	5·6	·75	..	..	..	..	..	..	..	..
	3	Respiratory "	173	..	65·	..	17	..	35·1	..	28	..	91·8	..
	4	Digestive "	91	3	34·2	1·12	8	..	16·5	..	28	..	91·8	..
	5	Urinary "	1	..	·4	..	3	..	6·2	..	..	..	..	..
	6	Reproductive "	2	..	·7	..	..							
	7	Locomotive "	3	..	1·1	..	..	..	..	..	1	..	3·3	..
	8	Integumentary "	414	..	155·5	..	62	..	128·1	..	64	..	209·8	..
IV. ..	4	Diseases of Nutrition ...	26	..	9·8	..	1	..	2·1	..	2	..	6·6	..
V.	1	Accidents	167	3	62·7	1·12	23	..	47·5	..	26	..	85·2	..
	3	Homicide	..	..	..	..	..	..	..	..	..	..	..	..
	4	Suicide	..	..	..	..	..	..	..	..	..	..	..	..
	6	Corporal Punishment ..	12	..	4·5	..	1	..	2·1	..	..	..	..	..
		Diseases not stated ..	8	..	3·0	..	5	..	10·3	..	2	..	6·6	..
		Total	2,294	41	861·4	15·37	416	..	859·5	..	359	2	1179·0	6·6

The points most deserving of notice in this table are the greater prevalence of venereal and of diseases of the nervous, respiratory, and digestive systems in Zante, and the exemption from diseases of the respiratory and digestive systems enjoyed by the troops in Cephalonia. The results of a series of years, however, would be necessary to justify our drawing any deductions on the subject.

Section II.

On the Extent of Invaliding among the Troops serving in the Mediterranean.

During 1859 there were finally discharged the service at Chatham 54 invalids from Gibraltar, 44 from Malta, and 17 from the Ionian Islands, making a total of 115, or 8·14 per 1,000 of the strength serving in these Commands. The following table shows the diseases for which they were discharged * :—

	Gibraltar.	Malta.	Ionian Islands.	Mediterranean generally.
Cachexies and Scrofula	2	1	1	4
Weakly constitutions	..	3	..	3
Dysentery and Hepatic diseases ..	..	2	..	2
Eye diseases	2	20	6	28
Dislocations	..	1	..	1
Hernia	1	3	..	4
Mental diseases	3	1	2	6
Paralysis	1	..	1	2
Epilepsy	1	3	1	5
Deafness	2	..	..	2
Pulmonary disease	14	3	2	19
Cardiac „	11	3	2	16
Rheumatism and chronic pains ..	10	..	..	10
Stricture and Urinary diseases	1	..	..	1
Venereal disease	1	3	..	4
Worn out	1	..	2	3
Ulcers and Varix	4	1	..	5
Total	54	44	17	115
Ratio per 1000 of strength ..	10·48	8·29	4·64	8·14

The points most worthy of notice in this table are the comparatively large proportion of invalids from Gibraltar discharged for pulmonary and cardiac diseases, and from Malta

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* We are compelled on the present occasion to adhere to the old classification of the disabilities of the Invalids. In future reports these will be arranged on the same principle as the diseases.

Mediterranean.

Invaliding.

for diseases of the eye. The former, although not so great as to account for the reduced mortality which we have ascertained to have taken place from consumption, as compared with former periods, may at least explain the lower ratio at Gibraltar than in the other two Commands.

We are unable, from want of data, to enter more fully into this subject, but it is believed that the forms of returns recently adopted will enable us to furnish more detailed information in future reports.

Section III.

Mean Daily Sick.

Mean sick.

The following table shows the average number constantly sick in each of the three commands:—

	Average Strength.	Average constantly Sick.	Ratio per 1,000 of Strength constantly Sick.	
			1859	1838–46
Gibraltar	5153	241·68	46·90	43·33
Malta (exclusive of Royal Malta Fencibles)	5310	275·12	51·81	48·79
Ionian Islands	3660	162·72	44'46	44·90

From this table, combined with the data in the preceding report, the average sick time to each soldier, and the average duration of the cases of sickness in hospital, have been ascertained as follows:—

		Gibraltar.	Malta.	Ionian Islands.
		Days.	Days.	Days.
Average sick time to each soldier	1859	17·12	18·91	16·23
	1838–46 ..	15.81	15·98	16·39
Average duration of each case	1859	18·04	15·50	18·42
	1838–46 ..	17·02	14·74	14·19

From these tables it will be observed that the average number constantly sick, and the average sick time to each soldier, have increased in Gibraltar and Malta, but are almost

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exactly the same as formerly in the Ionian Islands. The average duration of disease, however, has increased in all the Commands, but particularly in the Ionian Islands; a result, probably, of the amount of typhoid fever which came under treatment in the course of the year, and the convalescence from which was very protracted.

Section IV.

On the Influence of Age on the Mortality.

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The returns of the ages of the men serving not having been received from several of the regiments, the data on this subject are not complete; we have, however, compiled the following table from Abstract No. VI of Appendix, in which the details of the strength and deaths of those regiments which have furnished returns will be found stated in quinquennial periods:—

		Ratio of Deaths per 1,000 of Strength.						
		Under 20	20—24.	25—29.	30—34.	35—39.	40 and upwards.	Total.
Mediterranean generally	1859	9·28	12·01	20·78	25·64	12·15	[55·55	13·32
	1837-46	12·0	16·3	15·1	16·4	25·4	34·4	
Infantry at home, 1859		5·82	7·21	7·80	11·97	18·31	15·50	

From this table it will be seen that the mortality under 25 has been lower than during the ten years 1837-46, but higher afterwards. The numbers, however, above 30 years of age, were too few in 1859 to warrant our attaching much importance to the results. The table also shows that the mortality increases with age more rapidly in the Mediterranean than among troops serving at home.

III.—On the Health of the Troops serving in British America.

Section I.

Sickness and Mortality.

I. Bermuda.

Bermuda.

The force employed in the Bermudas in the beginning of 1859 consisted of Artillery and Engineers and the 26th Regiment. In the middle of October the 39th Regiment arrived from Canada, and the 26th embarked for England.

The average strength of the troops during the year was 1,074; among whom 577 admissions into hospital and 12 deaths occurred, being in the ratio of 537 and 11·16 per 1,000; but in addition to the deaths in the islands, three occurred among invalids sent home to England, which raise the mortality to 13·95 per 1,000.

These results show a remarkable diminution, both in the sickness and mortality, compared with the average of the ten years 1837-46, when the ratio of admissions was 1,334, and that of the deaths, 33·8 per 1,000. But during that period one of those severe epidemics of yellow fever prevailed, to which the Bermudas are occasionally subject. If, however, the year 1843, in which it occurred, be deducted, the average of the remaining nine years will give a proportion of 1,148 admissions and 20·57 deaths per 1,000 of the strength; so that, during the year 1859, the sickness has scarcely reached one-half, and the mortality very slightly exceeded two-thirds of that average.

This fortunate result was, probably, in some degree, owing to a precaution adopted during the summer months. As the barracks were greatly overcrowded when the hot weather set in, about one-half of the force was placed under canvas, and kept there till the end of the season.

The following table, compiled from Abstract No. VII of Appendix, shows the admissions into hospital and deaths, in 1859, by the different classes of diseases:—

ermuda.

	Strength, 1,074.				Annual Ratio per 1,000.			
		Deaths.			1859.		1837-46.	
	Admissions.	In the Bermudas.	Of Invalids.	Total.	Admissions.	Deaths.	Admissions.	Deaths.
Class I.								
1. Miasmatic diseases ..	121	2	..	2	112·7	1·86	610·6	18·41
2. Enthetic ,, ..	69	..	..	..	64·3	..	80·2	·09
3. Dietic ,, ..	..	..	..	..	..	..	4·4	·09
4. Parasitic ,, ..	6	..	..	..	5·6	..	·4	..
Class II.								
1. Diathetic diseases ..	3	..	..	..	2·8	..	2·3	..
2. Tubercular ,, ..	6	3	3	6	5·6	5·58	17·2	6·24
Class III. Diseases of the—								
1. Nervous system ..	25	3	..	3	23·3	2·79	15·7	1·16
2. Circulatory ,, ..	4	..	..	..	3·7	..	4·3	·53
3. Respiratory ,, ..	57	..	..	..	53·1	..	121·1	3·11
4. Digestive ,, ..	76	1	..	1	70·7	·93	72·3	1·07
5. Urinary ,, ..	1	..	..	..	·9	..	2·4	·09
6. Reproductive ,, ..	2	..	..	..	1·8	..	·2	..
7. Locomotive ,, ..	5	..	..	..	4·7	..	·7	..
8. Integumentary ,, ..	124	..	..	..	115·5	..	159·8	·27
Class IV.								
4. Diseases of Nutrition ..	1	..	..	..	·9	..	3·5	·09
Class V.								
1. Accidents	72	1	..	1	67·0	·93	77·3	1·77
4. Suicide	..	2	..	2	..	1·86	..	·44
5. Execution	..	..	..	..	..	..	..	·09
6. Corporal Punishment ..	1	..	..	..	·9	..	5·6	..
Diseases not specified ..	4	..	..	..	3·7	..	9·	·34
Total	577	12	3	15	537·2	13·95	1187·	33·79

An examination of this table shows a very great reduction in the admissions by miasmatic diseases and diseases of the respiratory and integumentary systems, while there has been an increase in those of the nervous system. The diminished rate of mortality has also been chiefly in the miasmatic diseases and those of the respiratory organs, although it is manifest in a less degree in all the orders except diseases of the brain and suicide. Compared with the Infantry serving at home the most striking difference is in the enthetic diseases (venereal), the relative proportions being 64 and 399 per 1,000. Diseases of the respiratory organs are little more than half as prevalent in the Bermudas, but those of the digestive organs furnish more than double the proportion of admissions.

Bermuda

When the force employed is so small as in the Bermudas considerable fluctuations must be expected in the results, and it is only from the returns of a series of years that correct deductions can be drawn. It does not appear necessary, therefore, to enter upon the same minute examination of the various groups of diseases as in the Mediterranean. The very great decrease, however, in the amount of admissions and deaths by miasmatic diseases seems to merit further remark.

In comparing the prevalence of these diseases during 1859 with the previous average, we shall omit the returns ot 1843, as being exceptional on account of the severe epidemic of yellow fever which cut off above one-sixth of the troops serving at St. George's. Subdividing the miasmatic diseases into the same groups as in the Mediterranean report, the ratio of admissions and deaths in 1859, and the nine years, 1837-46, exclusive of 1843, have been as follows:—

			Annual ratio per 1,000.			
			1859.		Average of 9 years.	
	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
Eruptive Fevers ..	..	..	..	..	·6	..
Paroxysmal " ..	2	..	1·8	..	2·9	·10
Continued " ..	11	2	10·2	1·86	86·3	2·32
Dysentery, Diarrhœa, and Cholera	54	..	50·3	..	250·1	2·42
Sore Throat	4	..	3·7	..	8·5	..
Ophthalmia	32	..	29·8	..	162·9	..
Rheumatism	18	..	16·8	..	42·5	..

A glance at this statement shows, that while there has been a reduction in all the groups of diseases it has been much greater in dysentery, diarrhœa, &c., than in any other, the proportion of admissions by them in 1859 being only one-fifth of the average of the previous non-epidemic years.

The low rate of admissions by continued fevers is also worthy of remark, being less than an eighth of the former average, and only one-third of that among infantry serving at home. The amount of ophthalmia has also been very nuda. small, but, small as it is, two-thirds of the cases occurred during the last two months and a-half of the year, in the 39th Regiment, which had suffered considerably from that disease in Canada.

II. Nova Scotia and New Brunswick.

a Scotia, The force employed in Nova Scotia and New Brunswick consisted of Royal Artillery, Royal Engineers, the 62nd and the 63rd Regiments. The average strength was 1,798; the admissions into hospital amounted to 1,003, and the deaths within the limits of the command to 11, the former being in the ratio of 558, and the latter of 6·12 per 1,000 of mean strength. But to these must be added the deaths of two invalids sent to England, which raise the mortality to 7·23 per 1,000. Compared with the results of the ten years 1837-46, these ratios show a marked improvement in the health of the troops, the admissions being 342, and the deaths 8·77 per 1,000 less than formerly. Even in comparison with the Infantry serving at home, this rate of mortality is very favourable, and it is a fraction lower than that of the civil population in the healthiest districts of England, which, if the ages were distributed in the same proportions as amongst the troops in Nova Scotia, would be at the rate of 7·57 per 1,000.

The diminished mortality may be to a small extent owing to the proportion of young men serving in the command having been greater in 1859 than during the previous period. In the returns of ages for the ten years 1837-46, the regiments serving in Nova Scotia are mixed up with those in Canada, and it is impossible, therefore, to calculate the exact amount to which this has affected the results.

The diseases by which the admissions into hospital and deaths have been occasioned are given in detail in Abstract No. VII of Appendix, from which the following summary has been prepared:—

Nova Scoti
&c.

	Strength 1,798.				Annual Ratio per 1,000.			
		Deaths.			1859.		1837–46.	
	Admissions.	In Nova Scotia.	Of Invalids.	Total.	Admissions.	Deaths.	Admissions.	Deaths.
Class I.								
1. Miasmatic diseases ..	137	..	..	..	76·2	..	280·4	2·65
2. Enthetic " ..	202	..	..	..	112·3	..	98·3	·04
3. Dietic " ..	..	1	..	1	..	·56	·2	·19
4. Parasitic " ..	7	..	..	..	3·9	..	·2	..
Class II.								
1. Diathetic diseases ..	6	..	..	..	3·3	..	4·	·07
2. Tubercular " ..	31	5	2	7	17·2	3·88	10·7	4·89
Class III. Diseases of the—								
1. Nervous system ..	26	..	..	..	14·5	..	18·7	1·94
2. Circulatory " ..	6	1	..	1	3·3	·56	2·7	·33
3. Respiratory " ..	158	2	..	2	87·9	1·11	172·9	2·90
4. Digestive " ..	71	1	..	1	39·5	·56	52·4	·93
5. Urinary " ..	3	..	..	..	1·6	..	2·5	·04
6. Reproductive " ..	..	..	..	..	..	..	·8	..
7. Locomotive " ..	3	..	..	..	1·6	..	1·	..
8. Integumentary " ..	143	..	..	..	79·5	..	125·2	·19
Class IV.								
4. Diseases of Nutrition ..	1	..	..	..	·6	..	·1	·04
Class V.								
1. Accidents	186	1	..	1	103·4	·56	119·1	1·20
3. Homicide	..	..	..	..	..	..	..	·04
4. Suicide	..	..	..	..	..	..	..	·48
6. Corporal Punishment ..	2	..	..	..	1·1	..	6·6	..
Diseases not specified ..	21	..	..	..	11·9	..	4·5	·07
Total	1003	11	2	13	557·8	7·23	900·3	16·

This table shows the great reduction in the admissions into hospital to have been chiefly in the miasmatic diseases and those of the respiratory and integumentary systems. The diminished mortality will be found principally in the miasmatic and tubercular diseases, and also, though to a less extent, in those of the nervous and respiratory systems. There has been an increase in the admissions by tubercular diseases, and also to a trifling extent in venereal.

We shall now proceed to offer a few remarks on some of the leading classes of diseases.

I. MIASMATIC DISEASES.—The admissions into hospital by these have amounted to 76·2 per 1,000, and during the period under review there have been no deaths. In accordance with the practice adopted in the previous portions of this ova Scotia, &c.

report, the principal diseases composing this order have been subdivided into the following groups:—

	1859.		Annual ratio per 1,000.			
			1859.		1837–46.	
	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
Eruptive fevers ..	1	..	·55	..	2·35	·04
Paroxysmal „ ..	1	..	·55	..	15·93	·11
Continued „ ..	11	..	6·12	..	41·18	·91
Dysentery, Diarrhœa, and Cholera	36	..	20·02	..	71·89	1·12
Sore Throat	31	..	17·24	..	24·13	·07
Ophthalmia	20	..	11·12	..	81·21	..
Rheumatism	36	..	20·02	..	31·39	·04

From this it appears, that the reduction in the admissions has extended to all the diseases comprised in these groups, although to a less extent as regards sore throat than any of the others. Paroxysmal fevers have almost completely disappeared, probably owing to the country being better drained. The diminution in the amount of continued fevers is perhaps as remarkable as anything in this table, as the barracks are reported by the Medical Officers to be much overcrowded, and the town of Halifax is represented as being innocent of any of those sanitary improvements in the way of drains and sewers which have been considered necessary in other places for the preservation and amelioration of the health of the public. During the summer months, a large detachment has been stationed for rifle-practice on the shores of the harbour, about eight miles from Halifax, where the men have always been very healthy, and this has relieved to a considerable extent the overcrowding of the barracks in the hot weather.

In the beginning of the year, scarlet fever and diphtheria, and in the last quarter scarlet fever and measles prevailed to a great extent among the civil population, and were very fatal to the children, but the troops fortunately escaped. Among the children of the soldiers a considerable number of cases of scarlet fever and measles occurred, but only one of the former terminated fatally.

TUBERCULAR DISEASES have furnished a larger proportion of admissions than formerly, but the mortality has been 1 per 1,000 under the previous average. This has not been attributable to any greater amount of invaliding, as the number discharged the service for consumption in 1859, was below the usual proportion. It may perhaps be an accidental variation, arising from the limited force. Viewed in connection with

Nova Scot &c.

the diminished mortality by these diseases among the troops in the Mediterranean, it may be worthy of remark, that while, as before stated, the force there consisted chiefly of newly raised second battalions, that in Nova Scotia was composed entirely of single battalion regiments, and, consequently, had in it a very much larger proportion of old soldiers, men who had been for a considerably longer period exposed to any peculiar influence which may affect the health of the military.

Diseases of the Nervous System have given rise to fewer admissions than formerly, and to no deaths; but we regret to state, that of 36 cases, no fewer than 11 have been *delirium tremens*, being in the proportion of 6·12 per 1,000 of the strength. This is a small fraction lower than the previous average, which was 6·9, but still affords lamentable proof of the extent of intemperance among the troops in this colony.

Diseases of the Respiratory System have been only half as prevalent as formerly, the difference being chiefly in the amount of bronchitis.

Violent Deaths.—Only one fatal case appears in this class; it resulted from a severe wound of the knee joint. No case of suicide has been recorded.

Corporal Punishment was only twice inflicted during the year, being in the ratio of 1·1 per 1,000 of the strength. We are disposed to attribute the low ratio, compared with either that among the Infantry at home or in the Mediterranean, to the much larger proportion of old soldiers in the force, who are not only themselves less likely to commit offences for which this punishment is inflicted, but also exert a wholesome influence, in preventing their commission by the young and inexperienced soldier.

III. Canada.

Canada.

In the beginning of 1859 the force in Canada consisted of Royal Artillery, Royal Engineers, the 1st Battalion 17th Regiment, the 39th Regiment, and the Royal Canadian Rifle Corps. In the end of September the 39th Regiment left the command for the Bermudas, and was not replaced by another. The average strength of the troops during the year was 2,782 among whom 1,516 admissions into Hospital, and 27 deaths occurred, being in the ratio of 545 and 9·70 per 1,000. Two deaths, however, among invalids sent to England, must be added, which raise the proportion to 10·42 per 1,000 of mean strength.

As compared with the average of the ten years 1837-46, *mada.*

this shows a great decrease both in the admissions and deaths, the proportions during that period having been 982, and 17·42 per 1,000. But even this diminution is rather under stated, as, in consequence of the Canadian Rifles being composed almost exclusively of soldiers above thirty, the ages of the men now serving in Canada are higher than during the former period. We have already stated that it has been found impossible accurately to separate the returns of the ages of men serving in Nova Scotia and New Brunswick during the period 1836-47 from those in Canada, but if the results of the two Commands be combined, and the mortality calculated, supposing the proportion of men at different ages to have been as in the two Commands in 1859, the ratio will be found to be 17·83 for the former, and 9·24 for the latter period.

The diseases by which the admissions into hospital, and the deaths have been caused, are detailed in abstract No. VII of Appendix, of which the following table is a summary:—

	Strength, 2,782.				Annual ratio per 1,000.			
		Deaths.			1859.		1837–46.	
	Admissions.	In Canada.	Of Invalids.	Total.	Admissions.	Deaths.	Admissions.	Deaths.
Class I.								
1. Miasmatic diseases ..	370	6	..	6	133·	2·15	348·2	3·39
2. Enthetic " ..	284	..	..	..	102·1	..	117·3	·02
3. Dietic " ..	31	..	..	..	11·1	..	2·1	·25
4. Parasitic " ..	4	..	..	..	1·4	..	·3	..
Class II.								
1. Diathetic diseases ..	13	..	..	..	4·7	..	3·6	·09
2. Tubercular " ..	24	5	..	5	8·6	1·79	9·6	4·89
Class III. Diseases of the—								
1. Nervous system ..	56	4	..	4	20·1	1·44	20·	1·73
2. Circulatory " ..	12	1	2	3	4·3	1.08	2·7	·45
3. Respiratory " ..	189	7	..	7	67·9	2·52	149·1	2·80
4. Digestive " ..	92	1	..	1	33·1	·36	58·5	·85
5. Urinary " ..	6	..	..	..	2·1	..	1·3	·03
6. Reproductive " ..	1	..	..	..	·3	..	·8	..
7. Locomotive " ..	7	..	..	..	2·5	..	1·	..
8. Integumentary " ..	194	..	..	..	69·7	..	121·9	·17
Class IV.								
4. Diseases of Nutrition ..	3	..	..	..	1·3	..	·4	·01
Class V.								
1. Accidents	221	2	..	2	79·4	·72	134·2	2·09
2. Battle	..	..	..	..	..	..	..	·16
3. Homicide	..	..	..	..	..	..	..	·01
4. Suicide	..	1	..	1	..	·36	..	·23
6. Corporal Punishment ..	3	..	..	..	1·3	..	8·7	..
Diseases not specified ..	6	..	..	..	2·1	..	2·	[illegible]
tal	1,516	27	..	29	545·	10·42	981·7	17·4

Canada.

This table shows the reduction in the admissions, compared with the previous period, to have been chiefly in miasmatic diseases, and those of the respiratory, digestive, and integumentary systems. There have also been fewer accidents. The lower rate of mortality has been principally shown in tubercular diseases, and the deaths from accidents and violence.

We shall now offer a few remarks on the principal classes of diseases.

I. MIASMATIC DISEASES.

		1859.	1837–46.
Annual ratio per 1,000	Admitted	133·	348·2
	Died	2·15	3·39

Subdividing these as before into smaller groups, we obtain the following results :—

			Annual ratio per 1,000.			
			1859.		1837–46.	
	Admitted.	Died	Admitted.	Died.	Admitted.	Died.
Eruptive fevers	2	..	·7	..	2·9	·22
Paroxysmal „	15	..	6·5	..	30·2	·25
Continued „	64	4	23·	1·44	72·3	1·88
Dysentery, Diarrhœa, and Cholera	78	..	28·	..	99·1	·66
Sore Throat and Influenza..	32	..	11·5	..	20·6	·09
Ophthalmia..	98	..	35·2	..	79·4	..
Rheumatism	75	1	26·9	·36	39·8	·05

Thus it appears that there has been a reduction in all the groups. Paroxysmal fevers have nearly disappeared, and continued fevers have fallen a little below the average among Infantry in the United Kingdom.

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Ophthalmia is scarcely half as prevalent as formerly, but it may be remarked, that the ratio would have been much lower, had it not been for the number of cases in the 39th Regiment, in which 60 out of the 98 admissions occurred.

The mortality by continued fevers is not much below the former average, but two out of the four deaths can scarcely be attributed to the climate of Canada, having occurred in men who had just arrived from England, and who are stated to have come out in a freight-ship in which the accommodation was not good. One of the men arrived labouring under the premonitory symptoms of fever, and they both died within 26 days of their arrival in the colony.

ENTHETIC DISEASES.—There has been a slight decrease in the admissions by venereal, the proportion having been 102 per 1,000, while the previous average was 117. But this difference has arisen from a difference in the constitution of the force. The Canadian Rifle Regiment having been raised and kept up by volunteers from other corps who have completed at least 12 years' service, has in its ranks a very much larger proportion of married men than is usual in the Army. In 1859, the admissions by these diseases in the Rifle Corps were in the ratio of 37 per 1,000 of the strength, and among the rest of the troops in Canada, 148 per 1,000; so that but for the altered constitution of the force, the returns would have shown an increase instead of a diminution.

DIETIC DISEASES are considerably above the previous average, but this is probably owing to the introduction into the returns of the term drunkenness (*ebriositas*). Thirty cases were entered under this head in 1859, which would probably have appeared as fever, or perhaps as "under observation," in the old returns.

TUBERCULAR DISEASES.—The proportion of admissions by these has been nearly the same, but that of the deaths less than half as high as formerly. The number, however, is too small to justify the deduction that this may not be the effect of accidental irregularity.

DISEASES OF THE NERVOUS SYSTEM have furnished almost exactly the same results as formerly. Of 56 admissions 32 were caused by *delirium tremens*, being in the proportion of 11·5 per 1,000 of the strength, while the average of the former period amounted to 9·44. This increase, however, has been in the Canadian Rifles, among whom 18 admissions occurred, or in the proportion of 16·79 per 1,000 of the strength, and 23 of the 30 cases of drunkenness reported under "Dietic Diseases" occurred also in it. Among the rest of the troops, the admissions by *delirium tremens* were in the ratio of 8·19 per 1,000, or rather under the previous amount. *Canada.*

DISEASES OF THE RESPIRATORY ORGANS have only been half as prevalent as formerly, but the mortality remains nearly the same. There has also been a considerable reduction in diseases of the DIGESTIVE ORGANS, which may perhaps have to some extent been attributable to the absence of that great heat which usually prevails during summer in Canada, and from which there was a marked exemption in 1859.

The remaining classes of diseases seem hardly to require comment.

CORPORAL PUNISHMENT has been very rarely resorted to in 1859, only three admissions from it appearing in the returns, and none of them being in the Canadian Rifle Regiment.

IV. NEWFOUNDLAND.

The force in Newfoundland, in 1859, consisted of the Royal Newfoundland Companies, a corps composed, like the Canadian Rifles, almost entirely of volunteers from Regiments of the Line, with not less than twelve years' service. *Newfoundland.*

The average strength of these Companies during the year was 209, the admissions into hospital were 278, and there was only one death. These figures give the annual ratio of admissions at 1,330, and of deaths 4·8 per 1,000. During the ten years, 1837-46, the proportions were 781, and 11·5 per 1,000. There has consequently been a considerable increase in the admissions and diminution in the deaths in 1859, but the force employed is so small that the observations of a series of years would be required to furnish a correct average.

The following table, compiled from Abstract No. VII of Appendix, shows the classes of diseases by which the sickness and mortality have been caused;—

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	Strength, 209.				Annual ratio per 1,000.			
		Deaths.			1859.		1837–46.	
	Admissions.	In Newfoundland	Of Invalids.	Total.	Admissions.	Deaths.	Admissions.	Deaths.
Class I.								
1. Miasmatic diseases ..	91	..	..	..	435·4	..	249·	·54
2. Enthetic „ ..	7	..	..	..	33·5	..	17·	..
3. Dietic „ ..	1	..	..	..	4·8	..	..	..
4. Parasitic „ ..	1	..	..	..	4·8	..	·3	..
Class II.								
1. Diathetic diseases ..	4	..	..	..	19·2	..	1·3	·27
2. Tubercular „ ..	5	..	..	..	24·	..	10·2	3·48
Class III.								
Diseases of the—								
1. Nervous system ..	14	1	..	1	67·	4·8	14·2	2·15
2. Circulatory „ ..	17	..	..	..	81·3	..	14·4	·54
3. Respiratory „ ..	59	..	..	..	282·3	..	190·2	·80
4. Digestive „ ..	15	..	..	..	71·7	..	56·1	1·61
5. Urinary „ ..	..	..	..	..	..	..	·5	..
6. Reproductive „ ..	..	..	..	..	..	..	·3	..
7. Locomotive „ ..	2	..	..	..	9·6	..	..	..
8. Integumentary „ ..	16	..	..	..	76·4	..	77·3	..
Class IV.								
4. Diseases of Nutrition ..	..	..	..	..	..	..	1·1	·27
Class V.								
1. Accidents	39	..	..	..	186·6	..	112·9	1·61
4. Suicide	..	..	..	..	..	..	..	·27
6. Corporal Punishment ..	3	..	..	..	14·3	..	11·8	..
Diseases not stated.. ..	4	..	..	..	19·2	..	24·4	..
Total	278	1	..	1	1330·1	4·8	781·	11·54

It will be observed that there has been an increase in the admissions by all classes of diseases, except those of the integumentary system. The only fatal case was one of *delirium tremens.*

It appears hardly necessary to enter upon a detailed consideration of the various classes of diseases where the numbers are so small. It may be sufficient to observe, with regard to Miasmatic Diseases, that although the admissions by these have been nearly double the former average, the increase has been attributable almost entirely to rheumatism. Of 91 admissions by this class, 35 were cases of that disease, and the Medical Officer remarks that many of them were believed to have come into hospital with a view to being discharged the service as invalids. Of the remaining 56 cases, 12 were sore throat, 10 diarrhœa, and 18 influenza, which prevailed as an epidemic at St. John's, in December. *Newfoundland.*

Owing to the high proportion of married men in the corps, the admissions for venereal have been very few, amounting only to 33 per 1,000 of the strength, or rather lower than in the Canadian Rifles, among whom, as we have already pointed out, the same cause of exemption is in operation.

V. British Columbia.

British Columbia. This station was for the first time occupied by the troops in April, 1859, two companies of the Royal Engineers having been sent to found the capital of the colony. A description of the station, by Assistant-Surgeon Seddall, who went out in medical charge of the troops, will be found at page 222 of this volume.

The strength of the troops was 150, and the admissions into hospital, from the 19th of April to the 31st of December, were 85. The only death was from drowning, and the admissions, in the annual ratio of 814 per 1,000 of strength, were the result of the following causes:—

18 wounds and injuries; 21 boils and ulcers; 14 catarrh; 12 venereal; 8 diarrhœa; 5 sore throat; 3 chronic rheumatism; 1 ophthalmia; 1 delirium tremens; 1 amaurosis; and 1 indigestion. These facts show the detachment to have enjoyed excellent health, to which the constant occupation of the men, the good quality of the supplies, and the judicious nature of their clothing, no doubt materially contributed. One-fifth of all the admissions were from accidents mostly connected with the nature of the men's employment.

Section II.

On the extent of Invaliding.

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The numbers finally discharged the service at Chatham of invalids from British America, were, from Bermuda, 5, or 4·65 per 1,000 of the strength; from Nova Scotia and New Brunswick, 13, or 7·28 per 1,000; Canada, 22, or 7·91 per 1,000; and Newfoundland, 9, or 43·01 per 1,000. The very high ratio from the last station arises, of course, from the nature of the force employed there, the Newfoundland Companies being recruited by volunteers who have already served in the army for a period of not less than twelve years.

The disabilities for which these men were discharged were as follows:—

	Bermuda.	Nova Scotia and New Brunswick.	Canada.	Newfoundland.
Cachexies and Scrofula..	..	1	..	..
Weakly Constitution	1	1	1	2
Dysentery and Hepatic diseases ..	..	..	1	..
Eye diseases	1	2	2	..
Wounds (not received in action) ..	..	1	2	..
Contractions	..	1	..	..
Hernia	..	1	2	..
Mental disease	..	1	..	..
Epilepsy..	..	1	..	..
Pulmonary disease	1	3	7	2
Cardiac „	..	1	2	1
Rheumatism and Chronic Pains ..	..	..	1	1
Stricture and Urinary diseases ..	..	..	3	..
Venereal	1	..	..	..
Worn out	1	..	..	2
Ulcers and Varices	..	..	1	1
Total	5	13	22	9
Ratio per 1,000 of strength	4·65	7·28	7·91	43·01
„ „ 1837-46 ..	12·3	14·1	15·2	48·3

This table shows the proportion discharged as invalids to have been only half the previous average, except from Newfoundland. The disabilities in which the reduction has been most marked are pulmonary and ocular diseases. Not only is the proportion of the former considerably below the previous average, but it is so small that it could not possibly account for the reduction which we have already shown to have taken place in the mortality by consumption in these Commands.

Section III.

Mean Daily Sick.

British America.

Mean sick

The average number constantly non-effective from sickness during the year, was, in Bermuda, 37·71; in Nova Scotia and New Brunswick, 40·25; in Canada, 78·64, and in Newfoundland, 7·75. From these numbers, combined with the information contained in the preceding portion of the report, we deduce the following results:—

		Ratio per 1,000 constantly sick.	Average sick time to each Soldier.	Average duration of each case.
			Days.	Days.
Bermuda ..	1859 .. .	35·11	12·82	23·75
	1838–46	55·8	20·4	17·1
Nova Scotia and New Brunswick	1859	22·39	8·18	14·65
	1838–46	34·8	12·7	14·1
Canada ..	1859	28·27	10·32	18·93
	1838–46	39·1	14·3	14·5
Newfoundland..	1859	37·10	13·54	10·18

It will be observed that while the ratio per 1,000 constantly sick is highest, the average duration of disease is lowest in Newfoundland, a circumstance which appears fully to bear out the remark of the surgeon, that many of the men came into hospital with a view to obtain their discharge from the service rather than on account of having any serious disease. In the other Commands there has been a well-marked reduction in the proportion constantly sick and the average sick-time to each soldier; but in Bermuda and Canada this has been attended by an increase in the duration of the cases under treatment.

Section IV.

Influence of Age on the Mortality.

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A detailed statement will be found in Abstract No. VIII of Appendix, showing the ages, in quinquennial periods, of the men serving in each of the regiments in British America, and the deaths at each age, of which the following is a summary:—

	Ratio of Deaths per 1,000 of Strength at each Age.						
	Under 20.	20—24.	25—29.	30—34.	35—39.	40 and upwards.	Total.
Bermuda	..	10	5·35	24·15	48·08	..	16·51
Nova Scotia, &c. ..	10·20	5·06	2·51	36·15	..	..	7·80
Canada	8·85	8·94	11·54	4·42	15·27	10·38	10·07
Newfoundland ..	..	..	..	..	13·51	..	5·35
Total ..	8·89	7·44	6·99	15·05	39·44	7·71	10·27
Canada, Nova Scotia, and New Brunswick, 1839–46	14·8	13·1	17·7	19·2	20·3	35·6	..
Infantry at home, 1859	5·82	7·21	7·80	11·97	18·31	15·50	..

From this table it will be seen that, under thirty years of age, the rate of mortality does not differ greatly from that among infantry serving at home, but above that age it increases more rapidly in British America, a result in accordance with previous experience. The numbers at each age, in the different Commands, are too few to justify any comments on the differences which are shown in the proportion of deaths.

IV. ON THE HEALTH OF THE TROOPS SERVING IN THE WEST INDIES.

Section I.

Sickness and Mortality.

I. WINDWARD AND LEEWARD COMMAND.

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THE force employed during the year consisted of Royal Artillery, a detachment of the 41st Regiment the head-quarters of which were serving in Jamaica, the 49th, the 3rd West India Regiment, and the Military Labourers. As the last two corps are composed of negroes, we shall notice the details respecting them separately from those of the white troops.

WHITE TROOPS.

The strength of the white troops in the Command averaged 1,215, among whom 1,371 admissions into hospital and 24 deaths occurred, being in the ratio of 1,128 and 19·75 per 1,000 of the force. No deaths occurred among the invalids on the passage home, or at Chatham. These ratios show a great reduction, both in the sickness and the mortality, compared with the results of the ten years 1837-46, when they averaged 1,936 and 69·54 per 1,000 annually. The diseases by which the admissions and deaths were caused will be found detailed in Abstract No. IX of Appendix, of which the following table is a summary, with the addition of the results of the previous period:—

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Diseases.	1859.				1837–46.	
	Strength, 1,215		Ratio per 1,000.		Ratio per 1,000.	
	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
Class I.						
1. Miasmatic diseases ..	613	12	504·5	9·88	1271·5	53·81
2. Enthetic „ ..	144	..	118·5	..	62·5	·06
3. Dietic „ ..	..	1	..	·82	2·4	·06
4. Parasitic „ ..	4	..	3·3	..	1·4	..
Class II.						
1. Diathetic diseases ..	5	..	4·1	..	5·8	·73
2. Tubercular „ ..	9	1	7·4	·82	16·	5·22
Class III. Diseases of the—						
1. Nervous system ..	53	5	43·6	4·12	34·	3·88
2. Circulatory „ ..	1	2	·8	1·65	1·7	·14
3. Respiratory „ ..	50	1	41·1	·82	106·2	3·33
4. Digestive „ ..	97	..	80·	..	117·4	1·65
5. Urinary „ ..	2	..	1·6	..	2·5	·03
6. Reproductive „ ..	2	..	1·6	..	1·3	..
7. Locomotive „ ..	3	..	2·5	..	·6	..
8. Integumentary „ ..	238	..	195·9	..	191·1	·20
Class IV.						
4. Diseases of Nutrition ..	6	..	4·9	..	·6	·17
Class V.						
1. Accidents	119	1	98·0	·82	106·	·23
4. Suicide	1	1	·8	·82	..	..
6. Corporal punishment ..	3	..	2·5	..	11·9	..
Diseases not stated.. ..	21	..	17·3	..	2·9	·03
Total	1,371	24	1128·4	19·75	1935·8	69·54

This table shows that the great reduction, both in sickness and mortality, has occurred in the miasmatic diseases, but there is also a considerable diminution in the deaths by tubercular diseases. The only class in which there has been a marked increase has been in that of venereal affections, the admissions by which have nearly doubled.

MIASMATIC DISEASES.

	Ratio per 1,000 of strength.	
	1859.	1837–46.
Admitted	504·5	1271·5
Died	9·88	53·81

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In these diseases a reduction of three-fifths has taken place in the admissions, and of four-fifths in the deaths. Subdividing the diseases into groups, as in the preceding portions of this report, the following results are obtained :—

	1859.		Annual ratio per 1,000.			
			1859.		1837-46.	
	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
Eruptive fevers	3	..	2·5	..	·7	·03
Paroxysmal „	233	11	191·8	9·05	553·8	34·66
Continued „	145	1	119·3	·82	159·	5·24
Dysentery, Diarrhœa, and Cholera	31	..	25·5	..	326·5	13·65
Sore Throat	14	..	11·5	..	7·1	..
Ophthalmia	142	..	116·9	..	169·4	·08
Rheumatism	43	..	35·4	..	52·8	·17

From this it appears that the improvement has been most striking in paroxysmal fevers, and dysentery, diarrhœa, and cholera, and to a less degree in continued fevers. Great, however, as has been the diminution in the mortality from paroxysmal fevers, it would have been still more marked but for an epidemic of yellow fever at Trinidad, which broke out in September, 1858, and continued to prevail till the end of February, 1859. Although it commenced previous to the period included in this report, we shall briefly notice its progress from the date of its outbreak.

Remittent fever had been very prevalent in Trinidad during the third quarter of 1858, but about the middle of September two undoubted cases of yellow fever occurred in St. James's Barracks. On the 22nd of that month the troops were encamped on the Savannah, about a mile to the eastward of the town, and the disease ceased. On the 29th of November, after the barracks had been thoroughly cleansed and whitewashed, they were re-occupied by the troops. On the 1st of December, a case of yellow fever was admitted into hospital; another followed on the 21st, and a third on the 28th. As the disease continued to spread, the troops were re-encamped on the 10th of January, and although several cases occurred subsequently they could all be clearly traced to the barracks. The troops remained encamped till the 3rd of May, but no cases of the disease were admitted after the end of February. During the progress of the epidemic, 28 cases of yellow fever were returned as lward Leeward nand.

admitted into hospital, and of these 24 died. The disease was clearly of local origin. The Medical Officers attributed it chiefly to the very unhealthy situation of the barracks, but the drains are also stated to be of the most faulty description, and scarcely ever properly flushed except during the heavy rains. The yellow fever did not spread over the island, but was confined entirely to St. James's.

Of the 24 deaths among the troops, 10 occurred in 1859. If these be deducted from the mortality already stated, the ratio for the whole year would only amount to 11·52 per 1,000 from all causes, and from paroxysmal fever only one death would have appeared in the returns.

Dysentery, Diarrhœa, and Cholera show a still more striking reduction than even paroxysmal fevers, the admissions having fallen from 326·5 to 25·5 per 1,000 There is also a very important difference in the nature of the cases, for in 1859 only one-sixth of them were dysentery, while formerly the proportion was nearly one-half.

Ophthalmia, though one-third less prevalent than formerly, is still a source of considerable inefficiency, having amounted to 119 per 1,000 of the strength.

ENTHETIC DISEASES, as already observed, have furnished nearly twice the former proportion of admissions, but no explanation of the fact is given in the reports of the Medical Officers.

TUBERCULAR DISEASES were only one-half as prevalent as during the previous period, and occasioned but one death in 1859.

DISEASES OF THE NERVOUS SYSTEM have been both more prevalent and more fatal than formerly, and, we regret to say, bear strong testimony to the habits of intemperance among the troops. In a total of 51 admissions and 5 deaths *delirium tremens* has been the cause of 21 of the former and 4 of the latter. If to these be added a death from apoplexy, caused by drinking a quantity of spirits, and another by suicide whilst intoxicated, the deaths attributable directly to intemperance will amount to 4·94 per 1,000 of the strength, being one-fourth of all the deaths, or above two-fifths exclusive of those from epidemic yellow fever.

CORPORAL PUNISHMENT was only inflicted in three instances during the year, being in the ratio of 2·5 per 1,000 of the strength, or less than one-fourth of the proportion during the ten years 1837-46.

As it was found in former investigations that the sickness and mortality varied considerably in the different islands in this command, the following table is submitted, showing the proportion of admissions and deaths by the principal classes of diseases:—

	Annual Ratio per 1,000 of Strength in 1859.							
	Barbadoes.		St. Lucia.		Trinidad.		British Guiana.	
	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
Class I.								
1. Miasmatic diseases ..	362·6	..	604·2	..	931·6	63·17	650·4	
2. Enthetic „ ..	148·9	..	20·8	..	84·2	..	62·9	..
3. Dietic „ ..	..	1·27	..	..	..	..	..	..
4. Parasitic „ ..	3·8	..	10·4	..	..	..	..	..
Class II.								..
1. Diathetic diseases ..	3·8	..	10·4	..	5·3	..	..	
2. Tubercular „ ..	11·4	1·27	..	..	..	..	..	..
Class III. Diseases of the—								..
1. Nervous system ..	43·2	..	31·3	..	68·4	21·1	21·	
2. Circulatory „ ..	1·3	2·55	..	..	..	..	..	6·99
3. Respiratory „ ..	49·6	1·27	52·1	..	10·5	..	28·	..
4. Digestive „ ..	63·6	..	104·2	..	136·8	..	76·9	..
5. Urinary „ ..	2·6	..	..	..	..	..	..	..
6. Reproductive „ ..	2·6	..	..	..	..	..	..	..
7. Locomotive „ ..	3·8	..	..	..	..	..	..	..
8. Integumentary „ ..	224·	..	218·7	..	131·6	..	111·9	..
Class IV.								..
4. Diseases of Nutrition ..	7·6	..	..	..	..	..	..	
Class V.								..
1. Accidents	94·1	..	114·6	..	73·7	..	139·9	
4. Suicide	..	..	..	..	5·3	5·26	..	6·99
6. Corporal punishment ..	3·8	..	..	..	..	..	..	..
Diseases not stated.. ..	24·1	..	10·4	..	5·3	..	..	.. ..
Total	1050·8	6·36	1177·1	..	1452·7	89·53	1091·	13·98
Average of 20 years, 1817–36	..	58·5	..	122·8	..	106·3	..	84·

Thus it will be seen that, with the exception of Trinidad, the mortality in all the islands has been very low; indeed, the ratio is lower than in any year during the twenty included in the previous report upon the West Indies; but it must not be forgotten that the numbers under observation are greatly reduced, and are much too small to afford a steady average. We deem it unnecessary, under these circumstances, to enter upon a detailed consideration of the results shown in this table, and would merely call attention to the comparative exemption enjoyed at Barbadoes from miasmatic diseases, the relative prevalence of these and diseases of the digestive system in the different islands, and the amount of venereal at Barbadoes

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BLACK TROOPS.

The black troops employed in this command consisted the 3rd West India Regiment and a corps of Milita Labourers. The average strength in 1859 was 1,260, th admissions into hospital amounted to 1,276, and the deat to 21, being in the ratio of 10·13 and 16·66 per 1,000 the strength. Compared with the results of the 10 yea 1837–46, these figures show an increase in the admissio into hospital, but a decrease in the deaths equal to one-h the previous average. The diseases by which the admissio and deaths have been caused are specified in Abstract No. of Appendix and the classified results are given in the follo ing table:—

	1859.				1837–46.	
	Strength 1,260.		Ratio per 1,000.		Ratio per 1,000.	
	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
Class I.						
1. Miasmatic diseases ..	377	8	299·2	6·35	326·4	11·79
2. Enthetic " ..	242	..	192·1	..	47·6	·08
3. Dietic " ..	..	..	..	..	·3	..
4. Parasitic " ..	1	..	·8	..	1·4	·08
Class II.						
1. Diathetic diseases ..	14	..	11·1	..	4·4	·81
2. Tubercular " ..	10	3	7·9	2·38	9·2	4·42
Class III.						
Diseases of the—						
1. Nervous system ..	19	1	15·1	·79	11·5	2·37
2. Circulatory " ..	2	..	1·6	..	·6	·25
3. Respiratory " ..	142	3	112·7	2·38	72·4	6·55
4. Digestive " ..	58	2	46·	1·59	49·4	3·36
5. Urinary " ..	1	1	·8	·79	2·1	·16
6. Reproductive " ..	..	..	..	..	1·5	..
7. Locomotive " ..	5	..	4·	..	·4	..
8. Integumentary " ..	248	..	196·8	..	148·8	·98
Class IV.						
4. Diseases of Nutrition ..	2	..	1·6	..	·4	·25
Class V.						
1. Accidents	105	..	83·3	..	75·5	·98
3. Homicide	2	2	1·6	1·59	..	..
4. Suicide	..	1	..	·79	..	..
6. Corporal punishment ..	10	..	8·	..	15·	..
Diseases not stated ..	38	..	30·1	..	1·3	·08
Total	1,276	21	1012·7	16·66	768·2	32·16

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This table shows that the increase in the admissions has been chiefly caused by venereal, from which the black troops formerly enjoyed a marked exemption, but the admissions by which in 1859 considerably exceeded the proportion among the white troops.

While there has been only a slight diminution in the prevalence of miasmatic diseases, the mortality by them has been little more than one-half the former average. But although the admissions during the two periods approximate, there has been a considerable change in the relative prevalence of some of the groups constituting this class, as will be seen by the following table, showing the ratio of admissions per 1,000 of the strength:—

	1859.	1837–46.
By Eruptive Fevers	2·4	6·3
Paroxysmal „	117·5	58·3
Continued „	34·1	78·3
Dysentery, Diarrhœa, and Cholera	14·8	58·4
Sore Throat	11·9	5·
Ophthalmia	24·6	19·
Rheumatism	93·7	96·5

From this it appears that there has been a considerable reduction in the admissions by dysentery, diarrhœa, &c., and that paroxysmal fevers have been much more prevalent than formerly, but that a nearly corresponding reduction has taken place in fevers of the continued type.

The deaths from tubercular diseases have been only one-third of the previous proportion, and there has been a similar decrease in those by diseases of the respiratory organs.

Of the violent deaths two are returned under the head of homicide. A corporal and a private of the 3rd West India Regiment were stabbed in their barrack-room by a man of the same regiment, whom they were removing to the guard-room.

Ten men underwent corporal punishment during the year, being in the ratio of 8 per 1,000 of the strength, or a little above half the previous average.

The relative influence of the climate of the different islands upon the health of the black troops is shown in the following table, compiled from Abstract No. X of Appendix.

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	Annual Ratio per 1,000 of Strength.							
	Barbadoes.		St. Lucia.		Trinidad.		Br. Guiana.	
	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
Class I.								
1. Miasmatic diseases ..	245·4	6·64	213·6	..	274·5	19·6	471·8	..
2. Enthetic „ ..	246·7	..	58·3	9·7	68·6	..	142·9	..
3. Dietic „ ..	..	..	..	..	..	..	..	..
4. Parasitic „ ..	..	..	..	..	..	..	3·3	..
Class II.								
1. Diathetic diseases ..	1·3	..	29·1	..	9·8	..	29·9	..
2. Tubercular „ ..	7·9	2·65	..	..	9·8	9·8	10·	..
Class III.								
Diseases of the—								
1. Nervous system ..	16·	1·32	9·7	..	19·6	..	13·3	..
2. Circulatory „ ..	2·6	..	..	..	..	..	..	..
3. Respiratory „ ..	102·1	2·65	126·2	..	98·	..	139·6	3·32
4. Digestive „ ..	40·	1·32	48·5	..	58·8	9·8	56·5	..
5. Urinary „ ..	..	..	..	..	..	..	3·3	3·32
6. Reproductive „ ..	..	..	..	..	..	..	..	..
7. Locomotive „ ..	1·3	..	..	..	29·4	..	3·3	..
8. Integumentary „ ..	222·8	..	252·4	..	68·6	..	156·2	..
Class IV.								
4. Diseases of Nutrition ..	2·6	..	..	..	..	..	..	..
Class V.								
1. Accidents	80·9	..	135·9	..	58·8	..	79·7	..
3. Homicide	..	..	..	..	19·6	19·6	..	..
4. Suicide	..	1·32	..	..	..	..	..	..
6. Corporal punishment ..	7·9	..	19·5	..	..	..	6·6	..
Diseases not stated.. ..	38·5	..	29·1	..	49·	..	3·2	..
Total	1016·	15·9	922·3	9·7	764·5	58·8	1119·6	6·64
Average of 20 years, 1817-36	..	46·	..	42·7	..	39·7	..	40·6

The same remark applies to the black as to the white troops, that, with the exception of Trinidad, the mortality has been lower than in any year from 1817 to 1836.

On comparing this table with the similar one given for the white troops, it will be observed that in all the islands diseases of the respiratory system have been much more prevalent, but those of the digestive organs less frequent among the blacks. At Barbadoes the latter do not seem to have enjoyed the same comparative exemption from miasmatic diseases as the whites, and at Demerara, especially, the proportion admitted by this class has been very much above the average. The force at all the stations, however, is too small to justify any very positive deductions.

II. JAMAICA.

Jamaica.

The force employed in the island consisted of Royal Artillery, the head-quarters of the 41st Regiment, and the 2nd West India Regiment.

I. WHITE TROOPS.

The average strength of the white troops was 624, among whom 833 admissions into hospital and 9 deaths occurred; the former being in the ratio of 1,335, and the latter of 14·42 per 1,000 of the strength. Among the deaths, were two of barrack-serjeants, one of whom died of *delirium tremens*, and the other of apoplexy. If these be deducted, the ratio of deaths per 1,000 of the effective force, would amount only to 11·22; and there is nothing to be added on account of invalids who died at Chatham, or on their passage home.

These results present a striking, but easily explained, contrast with the mortality of former periods in this island—for instance the twenty years, 1817-36, when it ranged between 61 and 307 per 1,000 annually. At that time the troops were almost entirely quartered in the plains, where the sources of fever abound: during the past year, three-fourths of them have been stationed at Newcastle, at an elevation of 3,800 feet. The average strength of the white troops at this station was 481; the admissions into hospital amounted to 595, and the deaths to 4, being in the annual ratio of 1,237 and 8·32 per 1,000, or a mortality rather lower than that of the Foot Guards. At the stations in the lowlands, the average strength was 143, the admissions were 238, and the deaths 5, or 1,664 and 34·96 per 1,000 of the strength; but if the two barrack-serjeants already noticed be omitted, the mortality would only amount to 20·98 per 1,000, or about twice and a-half that at Newcastle.

It must not be forgotten, however, that the sickness and mortality in tropical climates are subject to great fluctuations, and that 1859 was a healthy year to the civil population of the island, as well as to the military. It would be imprudent, therefore, to draw any very decided deductions from the results of one year.

maica.

In the following table, compiled from Abstract No. IX of Appendix, showing the classes of diseases by which the admissions and deaths among the white troops were occasioned, it has not been deemed necessary to state the ratios of the former period, when the troops were so differently situated; but the admissions during the past year at Newcastle and Port Royal, are given with a view to show in what classes the difference between the hill and lowland stations is chiefly found.

	White Troops, Jamaica.				Newcastle.	Port Roy.	Newcastle.	Port Royal.
	Strength 624.		Ratio per 1,000.		Strength 481	124	Ratio per 1000.	
	Admitted.	Died.	Admitted.	Died.	Admitted.	Admitted.	Admitted.	Admitted.
Class I.								
1. Miasmatic diseases	269	3	431·1	4·8	175	78	363·8	629·
2. Enthetic "	133	..	213·2	..	101	31	210·	250·
3. Dietic "	..	..	..	..	..	..	..	..
4. Parasitic "	..	..	..	..	..	..	..	..
Class II.								
1. Diathetic diseases	1	..	1·6	..	..	..	..	..
2. Tubercular "	..	..	..	..	..	..	..	..
Class III. Diseases of the—								
1. Nervous system	14	3	22·5	4·8	3	6	6·2	48·4
2. Circulatory "	2	..	3·2	..	1	1	2·1	8·1
3. Respiratory "	32	..	51·3	..	25	5	52·	40·3
4. Digestive "	160	1	256·4	1·6	145	12	301·5	96·8
5. Urinary "	..	..	..	..	..	..	..	..
6. Reproductive "	1	..	1·6	..	1	..	2·1	..
7. Locomotive "	..	..	..	..	..	..	..	..
8. Integumentary "	127	..	203·5	..	84	42	174·6	338·7
Class IV.								
4. Diseases of Nutrition	3	..	4·8	..	3	..	6·2	..
Class V.								
1. Accidents	82	..	131·4	..	49	30	101·9	241·9
3. Homicide	..	1	..	1·6	..	..	..	..
4. Suicide	1	1	1·6	1·6	1	..	2·1	..
6. Corporal punishment	6	..	9·6	..	6	..	12·4	..
Diseases not stated	2	..	3·2	..	1	1	2·1	8·1
Total	833	9	1335·	14·4	595	206	1237·	1661·3

This table shows that one-third of all the admissions and deaths among the white troops has been caused by miasmatic diseases; and that another third of the deaths has *Jamaica.* been by diseases of the nervous system. On subdividing the miasmatic diseases, we obtain the following results:—

	Jamaica.				Newcastle.		Port Royal.	
			Ratio per 1,000.			Ratio per 1000.		Ratio per 1,000.
	Admitted.	Died.	Admitted.	Died.	Admitted.	Admitted.	Admitted.	Admitted.
Eruptive fevers	..	..	..	..	..	..	..	..
Paroxysmal „	82	3	131·4	4·81	14	29·1	55	443·5
Continued „	14	..	22·4	..	4	8·3	10	80·6
Dysentery, Diarrhœa, and Cholera	26	..	41·7	..	24	49·9	1	8·1
Sore Throat..	8	..	12·8	..	8	16·6	..	..
Ophthalmia..	129	..	206·7	..	117	243 2	10	80·6
Rheumatism	10	..	16·	..	8	16·6	2	16·1

From this it appears that the admissions by paroxysmal fevers have amounted only to 131, and the deaths to 4·81 per 1,000 of the strength, presenting a striking contrast to the results of the period when the white troops were quartered in the lowlands. Thus, on the average of the twenty years, 1817-36, the admissions by this class of fevers were 863 per 1,000 of the strength, and the deaths as high as 100·18, or one-tenth of the whole force.

Ophthalmia has been a source of considerable inefficiency, the admissions having amounted to 207 per 1,000 of the strength.

On comparing the relative prevalence of these groups at Newcastle and Port Royal, the only lowland station now occupied by any number of white troops, a great difference will be observed. At the former, paroxysmal fevers can scarcely be said to prevail, and even continued fevers furnish only one-fourth of the proportion of Port Royal, while diarrhœa and sore throat may be said to be confined to Newcastle, and the cases of ophthalmia are three times as high there as at Port Royal.

Jamaica.

ENTHETIC DISEASES.—The white troops in Jamaica formerly enjoyed a marked exemption from this class of diseases, the admissions on the average of twenty years having only been 20 per 1,000 of the strength. To whatever cause it was attributable, this exemption appears to have ceased; the proportion admitted in 1859 being as high as 213 per 1,000.

TUBERCULAR DISEASES, which were formerly a source of considerable mortality in Jamaica, have not been the cause of a single admission.

DISEASES OF THE NERVOUS SYSTEM have given rise to a mortality of 4·8 per 1,000; but two of the deaths were those of the barrack-serjeants already noticed. *Delirium Tremens* furnished 10 admissions and 2 deaths, being in the ratio of 16·0 and 3·2 per 1,000 of the strength.

DISEASES OF THE DIGESTIVE SYSTEM have been much more numerous at Newcastle than at Port Royal, but the difference has been almost entirely in cases of dyspepsia.

The other classes of diseases do not seem to require comment.

II. BLACK TROOPS.

The strength of the black troops averaged 807, the admissions into hospital were 1,034, and the deaths 27, being in the annual ratio of 1,281 and 30·95 per 1,000. On the average of ten years, 1840–9, the admissions and deaths among this class of troops were in the ratio of 834 and 29·86 per 1,000, so that, in 1859. the mortality was very slightly in excess of, but the sickness was one-half more than, the average.

The following table, compiled from Abstract No. X of Appendix, shows the admissions and deaths during the year, contrasted with those of the white troops for the same period:—

Jamaic

	Black Troops.				White Troops.	
	Strength, 807		Ratio per 1,000.		Ratio per 1,000.	
	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
Class I.						
1. Miasmatic diseases ..	504	11	624·5	13·63	431·1	4·8
2. Enthetic „ ..	266	2	329·6	2·48	213·2	..
3. Dietic „ ..	..	..	..	..	..	..
4. Parasitic „ ..	1	..	1·2	..	..	..
Class II.						
1. Diathetic diseases ..	3	1	3·7	1·23	1·6	..
2. Tubercular „ ..	19	7	23·5	8·67	..	..
Class III. Diseases of the—						
1. Nervous system ..	25	1	31·	1·23	22·5	4·8
2. Circulatory „ ..	1	..	1·2	..	3·2	..
3. Respiratory „ ..	37	3	45 9	3·71	51·3	..
4. Digestive „ ..	24	..	29·8	..	256·4	1·6
5. Urinary „ ..	2	..	2·5	..	..	..
6. Reproductive „ ..	..	..	..	..	1·6	..
7. Locomotive „ ..	1	..	1 2	..	..	..
8. Integumentary „ ..	83	..	102·9	..	203·5	..
Class IV.						
4. Diseases of Nutrition ..	..	..	..	..	4·8	..
Class V.						
1. Accidents..	52	..	64·4	..	131·4	..
3. Homicide..	..	..	..	..	..	1·6
4. Suicide	..	..	..	..	1·6	1·6
6. Corporal punishment ..	9	..	11·2	..	9·6	..
Diseases not stated	7	..	8·7	..	3·2	..
Total	1,034	25	1281·3	30·95	1335·	14·4

This table shows that half of the admissions were caused by miasmatic diseases, and one-fourth by venereal, while the chief mortality has arisen from miasmatic and tubercular diseases.

The following table shows the principal groups of the miasmatic diseases which have given rise to this sickness and mortality:—

	Black Troops.				White Troops.	
			Ratio per 1,000.		Ratio per 1,000.	
	Admitted.	Died.	Admitᵈ.	Died.	Admit.	Died.
Eruptive fevers	..	..	..	..	..	..
Paroxysmal „	387	5	479·5	6·19	131·4	4·81
Continued „	12	5	14·9	6·19	22·4	..
Dysentery, Diarrhœa, and Cholera	24	1	29·8	1·24	41·7	..
Sore Throat	12	..	14·9	..	12·8	..
Ophthalmia	20	..	24·8	..	206·7	..
Rheumatism	49	..	60·7	..	16·	..

maica.

Thus it appears that the admissions by this class of diseases have been chiefly caused by paroxysmal fevers, which have prevailed to a greater extent, and caused a higher rate of mortality than among the white troops, and even higher than among those quartered at Port Royal. The ordinary type was the intermittent, of which 325 cases occurred, and 62 of the remittent. Among those of the continued form were 7 cases and 4 deaths of typhoid fever, all of which occurred at Up Park Camp, in the first quarter of the year. The type of disease and its fatal character appear to have been, to a great extent, due to the defective construction and offensive state of the privies.

ENTHETIC DISEASES have been even more common among the black troops than among the white. Of the admissions 136 were from syphilis, &c., and 130 from gonorrhœa and swelled testicle. Among the whites the proportion was somewhat different, the syphilitic affections having been 85 and the gonorrhœal only 48.

TUBERCULAR DISEASES continue to be a source of great mortality among the negroes, the proportion of deaths in 1859 having been as high as 8·67 per 1,000 of the strength. The average of the twenty years 1817–36 was 7·85 per 1,000.

DISEASES OF THE RESPIRATORY ORGANS have been nearly as prevalent among the blacks as the whites, and have given rise to a higher mortality, while the reverse is the case as regards the next class, viz.—

DISEASES OF THE DIGESTIVE ORGANS, from which the black troops appear to enjoy a very marked exemption.

DISEASES OF THE INTEGUMENTARY SYSTEM have been twice as prevalent among the white as the black troops, the difference being in the admissions by boils and by ulcers.

No death by suicide occurred among the black troops during the year.

The proportion of admissions from the effects of corporal punishment was higher among the black than the white troops, in the proportion of 11·2 to 9·6 per 1,000.

III. THE BAHAMAS.

hamas.

THE force in these Islands consisted of a few Artillerymen, and a detachment of the 1st West India Regiment. The average strength of the white troops, including the European non-commissioned officers of the West India Regiment, was 27, and of these only one, a company serjeant-major, died, the cause of death being *delirium tremens*. The strength of the black troops was 322, among whom 268 admissions into hospital and 13 deaths occurred, being in the ratio of 832 and 40·3 per 1,000 of the strength. During the 20 years, 1817-36, the admissions averaged 1,070, and the deaths 40·1 per 1,000 of the strength annually, so that in 1859 the sickness was below the previous average, but the mortality remained unaltered. *Bahamas*

The following table compiled from Abstract No. X of Appendix, shows the principal classes of diseases among the black troops:—

	Strength, 322.		Ratio per 1,000.	
	Admitted.	Died.	Admitted.	Died.
Class I.				
1. Miasmatic diseases	123	..	382·	9·3
2. Enthetic „	49	..	152·2	..
3. Dietic „	1	..	3·1	..
4. Parasitic „	..	3	..	..
Class II.				
1. Diathetic diseases..	1	1	3·1	3·1
2. Tubercular „	5	5	15·5	15·5
Class III. Diseases of the—				
1. Nervous System	5	2	15·5	6·2
2. Circulatory „	..	..	..	..
3. Respiratory „	19	1	59·	3·1
4. Digestive „	6	..	18·6	..
5. Urinary „	1	..	3·1	..
6. Reproductive „	..	..	..	..
7. Locomotive „	1	..	3·1	..
8. Integumentary „	26	..	80·8	..
Class IV.				
4. Diseases of Nutrition	2	..	6·2	..
Class V.				
1. Accidents	25	..	77·6	..
4. Suicide	..	1	..	3·1
6. Corporal Punishment	2	..	6·2	..
Diseases not stated	2	..	6·2	..
Total	268	13	832·2	40·3

If these results be compared with the black troops in Jamaica, the most striking points will be found to be the less prevalence of miasmatic and enthetic diseases, and the much higher rate of mortality from tubercular diseases in the Bahamas, while the proportion of admissions by diseases both of the respiratory and of digestive systems is nearly alike, and considerably lower than among the black troops in the Windward and Leeward command.

IV. Honduras.

onduras. In 1859 the force in this settlement amounted to 27 Europeans, and 322 Blacks. The former were men of the Royal Artillery, and non-commissioned officers of the 1st West India Regiment, and the latter a detachment of that regiment from Jamaica. The only death among the Europeans was that of a gunner of the Royal Artillery, who was accidentally drowned.

Among the black troops, there were 274 admissions into hospital, and 2 deaths, both caused by a large draught of new rum; in one instance death was almost instantaneous, and in the other the man survived only ten hours. These numbers give 851 as the annual ratio of admissions and 6·2 of deaths. During the fifteen years 1822-36, the average was 881 and 30· per 1,000, so that there has been a considerable reduction in the mortality. But it must be remembered, that during that period there were great fluctuations in the deaths, the ratio having ranged between 59 in 1836, and 8 in 1833.

The following table, framed from Abstract No. X of Appendix, shows the principal classes of diseases, by which the admissions in 1859 were caused :—

	Strength, 322.		Annual ratio per 1,000.	
	Admitted.	Died.	Admitted.	Died.
Class I.				
1. Miasmatic diseases	94	..	291·9	..
2. Enthetic „	39	..	121·1	..
3. Dietic „	1	2	3·1	6·2
4. Parasitic „	6	..	18·6	..
Class II.				
1. Diathetic diseases	..	..	..	..
2. Tubercular „	..	..	..	..
Class III.				
Diseases of the—				
1. Nervous system	2	..	6·2	..
2. Circulatory „	..	..	..	..
3. Respiratory „	21	..	65·2	..
4. Digestive „	12	..	37·3	..
5. Urinary „	2	..	6·2	..
6. Reproductive „	..	..	..	..
7. Locomotive „	1	..	3·1	..
8. Integumentary „	45	..	139·8	..
Class IV.				
4. Diseases of Nutrition	..	..	..	..
Class V.				
1. Accidents	43	..	133·5	..
6. Corporal Punishment	6	..	18·6	..
Diseases not stated	2	..	6·2	..
Total	274	2	850·8	6·2

Hondura

The prevalence of the various classes does not appear to differ greatly from the results obtained with regard to the Bahamas, except in miasmatic diseases, which have been more numerous at the latter station. There has also been at Honduras a complete exemption during the year from tubercular diseases. Diseases of the respiratory and digestive organs have prevailed to a slightly greater extent than in Jamaica, but much less than in the Windward and Leeward Commands.

Section II.

Extent of Invaliding.

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The number of invalids from the West Indies finally discharged the service at Chatham in 1859 was, from the Windward and Leeward Command, 6, being in the proportion of 4·9 per 1,000 of force employed; and from Jamaica, 3, or 4·8 per 1,000. The disabilities of these men were as follows:—

	Windward and Leeward command.	Jamaica.
Eye diseases	2	..
Hernia	1	..
Mental disease	1	..
Paralysis	..	1
Pulmonary disease	1	..
Ulcers and Varices	..	1
Venereal	1	..
Worn out	..	1

It appears unnecessary to offer any remarks, as the numbers are too few to have any effect upon our previous conclusions regarding the influence of the various diseases upon the troops in these Commands.

Section III.

Mean Daily Sick.

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The average constantly non-effective from sickness amounted in the Windward and Leeward command to 60 of the white troops, and 51 of the black; and in Jamaica to

Indies. — sick

36·24 whites, and 55·95 blacks. These numbers give the following results:—

	White Troops.		Black Troops.	
	Windward and Leeward Comma	Jamaica.	Windward and Leeward Command.	Jamaica.
Ratio per 1,000 constantly sick ..	49·38	58·08	40·48	69·33
Mean sick time to each soldier.. ..	days. 18·02	days. 21·20	days. 14·77	days. 25·30
Average duration of each case of disease	15·97	15·88	14·59	19·75

Compared with previous periods (1817–36), there is a reduction in all the particulars noted in the table, but to a much greater extent in the Windward and Leeward Command than in Jamaica. It will be observed that the mean sick of the black troops is much higher in Jamaica, but the information contained in the returns from the Windward and Leeward command is not sufficiently detailed to enable us to trace the causes of this difference.

The mean daily sick of the black troops in the Bahamas in 1859 is stated at 9·48 or 29·45 per 1,000 of the strength. The average number of days' sickness to each man of the force must therefore have been 10·75, and the average duration of each case in hospital, 12·91 days.

Section IV.

Influence of Age on the Mortality.

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The only available returns are those of the 3rd West India Regiment, serving in the Windward and Leeward Command, of which the following is a summary:—

	Under 20.	20–24.	25–29.	30–34.	35–39.	40 and upwards.	Total.
Strength on April 1	103	356	216	205	160	31	1,071
Deaths during the year	1	4	7	8	1	..	21
Ratio per 1,000	9·71	11·24	32·41	39·02	6·25	..	19·61

There are no previous returns of the mortality at different ages among the black troops with which to compare these results, and the numbers are too few to warrant any decided conclusions. We have recorded them here that they may be available for future reference.

V. ON THE HEALTH OF THE TROOPS SERVING IN WESTERN AFRICA.

Western Africa.

THE troops employed in Western Africa consisted of a detachment of the 1st West India Regiment at Sierra Leone and the Gambia, and the Gold Coast Artillery Corps at Cape Coast Castle, with detachments at Accra, Annamaboe, and Dixcove. The force consisted entirely of blacks, with the exception of four or five European Serjeant-Majors, of whom three died in the course of the year, two of fever at the Gambia, and the third of dysentery at Accra.

The average strength of black troops at Sierra Leone during the year was 356, the admissions into hospital among them were 193, and the deaths 5, being in the ratio of 542 and 14·02 per 1,000. In the 18 years 1819–36 the admissions averaged 812, and the deaths 30·1 per 1,000 of the strength, so that during the past year the admissions have amounted to two-thirds, and the deaths been rather less than half the former average.

At the Gambia, the average strength was 314; the admissions were 205, and the deaths 8, being in the ratio of 653 and 25·44 per 1,000.

On the Gold Coast, the force was 279, among whom 162 admissions and 7 deaths occurred, being in the ratio of 581 and 25·06 per 1,000.

The diseases by which the admissions into hospital and deaths have been occasioned will be found specified in Abstract No. XI of Appendix, from which the following table has been compiled:—

Class.	Order.	Stations	Sierra Leone.				Gambia.				Gold Coast.			
		Strength	356.				314.				279.			
		Diseases.	Admitted.	Died.	Ratio per 1,000.		Admitted.	Died.	Ratio per 1,000.		Admitted.	Died.	Ratio per 1,000.	
					Admitted.	Died.			Admitted.	Died.			Admitted.	Died.
I.	1	Miasmatic diseases	80	1	224·7	2·8	62	..	197·4	..	33	2	118·3	7·16
	2	Enthetic "	38	..	106·8	..	47	1	149·7	3·18	9	..	32·3	..
	3	Dietic "	..	..	..	..	..	..	..	..	..	..	..	..
	4	Parasitic "	2	..	5·6	..	8	..	25·5	..	70	..	250·9	..
II.	1	Diathetic "	1	..	2·8	..	2	..	6·4	..	..	..	..	..
	2	Tubercular "	6	2	16·9	5·61	2	1	6·4	3·18	..	..	..	..
		Diseases of the—												
III.	1	Nervous system	..	..	..	..	6	..	19·1	..	3	..	10·8	..
	2	Circulatory "	..	..	..	..	1	1	3·2	3·18	..	..	..	..
	3	Respiratory "	14	..	39·3	..	31	2	98·7	6·36	6	..	21·5	..
	4	Digestive "	10	2	28·1	..	6	..	19·1	..	7	2	25·	7·16
	5	Urinary "	2	..	5·6	5·61	..	..	..	..	2	..	7·1	..
	6	Reproductive "	..	..	..	..	1	..	3·2	..	1	..	3·6	..
	7	Locomotive "	4	..	11·2	..	1	..	3·2	..	..	..	..	..
	8	Integumentary "	19	..	53·4	..	16	..	50·9	..	21	..	75·3	..
IV.	4	Diseases of Nutrition	1	..	2·8	..	2	..	6·3	..	..	..	..	..
V.	1	Accidents	15	..	42·1	..	13	..	41·4	..	7	2	25·	7·16
	3	Homicide	..	..	..	..	1	1	3·2	3·18	..	..	..	..
	4	Suicide	..	..	..	..	..	1	..	3·18	..	1	..	3·58
	5	Execution	..	..	..	..	..	1	..	3·18	..	..	..	..
	6	Corporal Punishment	..	..	..	..	1	..	3·2	..	..	..	..	..
		Diseases not stated	1	..	2·8	..	5	..	15·9	..	3	..	10·8	..
		Total	198	5	542·1	14·02	205	8	652·8	25·44	162	7	580·6	25·06

Western Africa.

The most striking points in this table are the comparative exemption of the troops on the Gold Coast from miasmatic and enthetic, and the great prevalence among them of parasitic diseases. The low rate of mortality by tubercular diseases is also worthy of notice.

The relative prevalence of the chief diseases constituting the miasmatic order is shown in the following table :—

Diseases.	Sierra Leone.		The Gambia.		The Gold Coast.	
	Admitted.	Ratio per 1,000.	Admitted.	Ratio per 1,000.	Admitted.	Ratio per 1,000.
Eruptive Fevers	18	50·6	10	31·8	..	..
Paroxysmal ,,	21	59·	26	82·8	6	21·5
Continued ,,	3	8·4	10	31·8	2	7·2
Dysentery and Diarrhœa ..	3	8·4	5	15·9	9	32·3
Sore Throat ..	2	5·6	1	3·2	..	..
Ophthalmia ..	4	11·2	3	9·6	6	21·5
Rheumatism ..	29	81·5	7	22·2	10	35·8

From this, it appears that at Sierra Leone and on the Gold Coast, rheumatism has been the cause of the greatest number of admissions, while, at the Gambia, paroxysmal fevers have been greatly in excess.

Eruptive fevers gave rise to a comparatively large number of admissions at Sierra Leone and the Gambia. This was in consequence of small pox breaking out among a batch of recruits who had been taken from a slaver. The disease fortunately proved mild, although the men were not protected by vaccination. Several attempts were made to vaccinate the men, which, unfortunately, were all unsuccessful. None of the cases of small pox proved fatal.

Paroxysmal and continued fevers were very prevalent at the Gambia, but gave rise to no deaths among the black troops. Yellow fever prevailed to a great extent among the civil population, and is stated to have cut off half the white inhabitants in this colony. The French settlement of Goree, 80 miles to the north, is said to have suffered "to an extent truly appalling."

Parasitic Diseases gave rise to nearly half the admissions on the Gold Coast. They were all caused by Guinea worms, of which no fewer than seventy cases came into hospital, while two only occurred at the Gambia, and none at Sierra Leone. The disease is endemic on the Gold Coast, and is attributed to the bad quality of the water.

1819 to 1836, when the annual average amoun
1,000 of the strength.

VI. ON THE HEALTH OF THE TROOPS SERVING IN THE ISLAND OF ST. HELENA.

St. Helena.

THE troops employed consisted of a company of Royal Artillery and the St. Helena Regiment; the average strength was 465, out of which 373 admissions into hospital and four deaths occurred, being in the ratio of 802 and 8·60 per 1,000; but two deaths of invalids, one on the passage home, and the other at Chatham, must be added, which raise the mortality to 12·90 per 1,000. Two of the deaths in the island were the result of accident, one man having been killed by a rock and another by a tree falling upon him; only four, therefore, occurred from disease.

During the ten years 1837–46 the admissions averaged 943, and the deaths, exclusive of those among invalids, 16·62 per 1,000 of the strength, so that the results of 1859 show a considerable reduction in both.

The following table, compiled from No. XII of Appendix, shows the principal classes of diseases by which the admissions and deaths were occasioned:—

	Strength, 465.				Ratio per 1,000 of Strength.			
		Died.			1859.		1837–46.	
	Admitted.	At St. Helena.	Invalids.	Total.	Admitted.	Died.	Admitted.	Died.
Class I.								
1. Miasmatic diseases ..	177	1	..	1	380·66	2·15	304·	3·64
2. Enthetic " ..	43	..	..	..	92·47	..	99·8	..
3. Dietic " ..	..	..	..	..	..	..	1·	..
4. Parasitic " ..	2	..	..	..	4·30	..	1·8	..
Class II.								
1. Diathetic diseases ..	3	..	..	..	6·45	..	6·	..
2. Tubercular " ..	3	..	..	..	6·45	..	21·	5·45
Class III.								
Diseases of the—								
1. Nervous system ..	9	..	1	1	19·35	2·15	22·1	1·3
2. Circulatory " ..	9	1	..	1	19·35	2·15	7·5	1·04
3. Respiratory " ..	14	..	..	..	30·11	..	86·2	1·81
4. Digestive " ..	15	..	1	1	32·26	2·15	105·5	1·56
5. Urinary " ..	..	..	..	..	..	..	5·7	..
6. Reproductive " ..	..	..	..	..	..	..	3·1	..
7. Locomotive " ..	1	..	..	..	2·15	..	2·6	·26
8. Integumentary " ..	51	..	..	..	109·68	..	153·	·26
Class IV.								
4. Diseases of Nutrition ..	..	..	..	..	..	..	2·3	·26
Class V.								
1. Accidents	37	2	..	2	79·57	4·30	111·7	·52
4. Suicide	..	..	..	..	..	..	..	·52
6. Corporal Punishment ..	..	..	..	..	..	..	2·9	..
Diseases not stated ..	9	..	..	..	19·35	..	7·	..
Total	373	4	2	6	802·15	12·90	943·2	16·62

St. Helena.

This table shows an increase to the extent of 77 per 1,000 in miasmatic diseases, but a marked decrease in those of the respiratory and digestive organs, while there has been no death by tubercular diseases, the mortality from which formerly averaged 5½ per 1,000 of the strength. An analysis of the admissions by miasmatic diseases furnishes the following results:—

Diseases.	1859.		1837–46.
	Admitted.	Ratio per 1,000 admitted.	Ratio per 1,000 admitted.
Eruptive Fevers	..	..	1·3
Paroxysmal „	..	..	4·7
Continued „	106	227·9	64·1
Dysentery, Diarrhœa, and Cholera	44	94·6	134·4
Sore Throat	6	12·9	5·7
Ophthalmia	3	6.4	2·8
Rheumatism	17	36·6	60·2

Thus, it appears, that a very great increase has taken place in continued fevers, while there has been a marked decrease in dysentery, diarrhœa, and cholera, and in rheumatism. The high ratio of continued fever is attributed, by the Surgeon of the St. Helena Corps, to the very crowded state of the barracks, solar heat, and intemperance. "Many of the fever cases," he observes, "were only of one or two days' duration, and ought to have been called 'ebrietas,' as they were unmistakeably occasioned by the abuse of wine."*

Not only has there been a great reduction in the prevalence of dysentery and diarrhœa, but also a marked change in their character. In 1859 only one case of dysentery was admitted, while there were forty-three of diarrhœa, whereas formerly their relative proportions were two to one. This result is probably to a considerable extent attributable to improved diet, salt meat being now issued only four instead of five times a week, and an abundant supply of vegetables, for part of the year at least, being raised at the regimental farm.

To the same cause may, perhaps, be attributed the diminution of diseases of the digestive system, which has been chiefly shown in cases of constipation and dyspepsia.

Notwithstanding the intemperate habits of the men, as already noticed, only two cases of *delirium tremens* have been admitted, and during previous periods, this disease appears to have been equally rare. *St. Helena.*

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* This defect will be remedied in future by the adoption of the Statistical Nomenclature.

No case of corporal punishment occurred during the year.

Invaliding. Only one invalid from St. Helena was discharged the service at Chatham, his disability being pulmonary disease.

Mean sick. The mean daily sick averaged 16·85, being in the ratio of 36·23 per 1,000 of the strength. From this we deduce the sickness to have been in the proportion of 13·23 days to each man of the force, and the duration of each case to have been 16·49 days.

VII. ON THE HEALTH OF THE TROOPS SERVING AT THE CAPE OF GOOD HOPE.

Section I.

Sickness and Mortality.

Cape of Good Hope.

IN the beginning of 1859, the force at the Cape consisted of Royal Artillery, Royal Engineers, the 1st Battalion 2nd, the 45th and 85th Regiments, and the Cape Mounted Rifles. On the 19th of January, the 59th Regiment landed from China, and on the 1st of February, the 2nd Battalion 13th Regiment, from England; and on the 2nd of June, the 45th left the colony for England.

The average strength during the year was 4,322, from which the admissions into hospital amounted to 4,657, and the deaths to 63, being in the proportion of 1,077 and 14·57 per 1,000. But this does not represent correctly the amount of sickness and mortality to which troops serving at the Cape are liable. The 59th Regiment had been so completely broken down by disease in China, that it was deemed necessary to send it to the Cape for change of climate, where it arrived on the 19th of January in a very sickly state, having lost 27 men during the voyage. From that date till the end of the year, it furnished 1,096 admissions and 18 deaths, out of an average strength of 641 men. If this regiment be entirely omitted from the calculations, the sickness and mortality at the Cape would only amount to 967, and 12·22 per 1,000 of the strength. During the ten years, 1837-46, the admissions averaged 945, and the deaths, exclusive of killed in action, 16·54 per 1,000; so that in 1859, the former were slightly in excess of, but the latter one-fourth under, the average.

As the returns do not enable us completely to separate the diseases of the 59th from those of the rest of the troops, we have prepared the abstract of the diseases at Cape Town, where that regiment was stationed along with detachments of Artillery and of the Cape Mounted Rifles, distinct from those on the Eastern Frontiers and at Natal; and the results are shown in the following table compiled from No. XII of Appendix.

			1859.												1837-46.	
		Stations	Cape Town.				Natal.				Eastern Frontiers.				Cape.	
		Strength	664.				562.				3,096.				24,947.	
Class	Order.	Diseases.			Ratio per 1,000.				Ratio per 1,000.				Ratio per 1,000.		Ratio per 1,000.	
			Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
I.	1	Miasmatic diseases ..	678	10	1021·1	15·1	203	2	361·2	3·55	801	7	258·7	2·26	304·1	5·25
	2	Enthetic „ ..	181	1	272·6	1·5	67	..	119·2	..	487	..	157·3	..	130·4	·12
	3	Dietic „ ..	2	..	3·	..	..	..	..	..	3	1	1·	·33	9·3	·24
	4	Parasitic „ ..	9	..	13·6	..	3	..	5·3	..	127	..	41·	..	4·3	..
II.	1	Diathetic „ ..	7	..	10·5	..	1	..	1·8	..	19	..	6·1	..	5·7	·12
	2	Tubercular „ ..	8	..	12·1	..	10	2	17·8	3·55	24	5	7·8	1·61	8·4	2·32
		Diseases of the—														
III.	1	Nervous system ..	34	7	51·2	10·5	19	..	33·8	..	70	4	22·6	1·28	24·9	1·32
	2	Circulatory „ ..	8	..	12·1	..	12	..	21·3	..	95	6	30·7	1·93	16·1	1·24
	3	Respiratory „ ..	70	2	105·4	3·	43	..	76·5	..	232	1	74·9	·33	112·7	1·66
	4	Digestive „ ..	37	..	55·7	..	31	1	55·2	1·77	149	3	48·1	·97	76·2	·63
	5	Urinary „ ..	..	..	..	..	1	1	1·8	1·77	2	..	·7	..	4·8	·20
	6	Reproductive „ ..	6	..	9·	..	..	..	..	..	22	..	7·1	..	·8	..
	7	Locomotive „ ..	1	..	1·5	..	2	..	3·6	..	13	..	4·2	..	2·3	..
	8	Integumentary „ ..	111	..	167·2	..	64	..	113·9	..	387	..	125·1	..	135·2	·16
IV...	4	Diseases of Nutrition ..	11	..	16·6	..	..	..	..	..	6	..	1·9	..	·3	·05
V.	1	Accidents	91	1	137·1	1·5	47	1	83·6	1·77	299	8	96·5	2·59	97·1	2·44
	3	Homicide	..	..	..	..	..	..	..	..	..	..	..	..	..	·12
	4	Suicide	..	..	..	..	..	..	..	..	..	..	..	..	..	·44
	6	Corporal Punishment ..	2	..	3·	..	2	..	3·6	..	20	..	6·5	..	6·5	..
		Diseases not stated ..	30	..	45·2	..	8	..	14·2	..	102	..	32·9	..	5·5	·16
		Total ..	1,286	21	1936·9	31·6	513	7	912·8	12·41	2,858	35	923·1	11·30	944·6	16·54

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od Hope.

This table shows a great similarity in the prevalence and mortality of the principal classes of diseases at Natal and on the Eastern Frontiers. At Cape Town there has been a great preponderence of miasmatic and enthetic diseases, and also of those of the respiratory organs.

MIASMATIC DISEASES.

		Cape Town.	Natal.	Eastern Frontiers.
Annual ratio per 1,000	Admitted	1,021	361	259
	Died ..	15·1	3·55	2·26

As the greater portion of the troops at Cape Town during the year consisted of the head-quarters of the 59th, the excess of miasmatic diseases there may be fairly attributed to the influence of the climate of China rather than that of the Cape. This will be even more clearly seen when the class is subdivided into smaller groups of diseases :—

Cape of Good H

Diseases.							Ratio per 1,000 of Strength.							
	Cape Town.		Natal.		Eastern Frontiers.		Cape Town.		Natal.		Eastern Frontiers.		Cape, 1837–46.	
	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
Eruptive Fevers ..	1	..	..	..	12	1	1·5	..	..	..	4·	·33	·7	..
Paroxysmal „ ..	370	3	..	..	41	..	557·2	4·51	..	..	13·2	..	1·	·05
Continued „ ..	19	1	69	1	137	3	28·6	1·50	122·8	1·77	44·2	·97	52·6	1 6
Dysentery, Diarrhœa and Cholera ..	180	6	13	1	130	3	271·1	9·03	23·1	1·77	42·	·97	110·8	3·2
Sore Throat	20	..	11	..	56	..	30·1	..	19·6	..	18·1	..	13·9	·05
Ophthalmia	28	..	78	..	273	..	42·2	..	138·8	..	88·2	..	57·2	..
Rheumatism	54	..	31	..	141	..	81·3	..	55·2	..	45·5	..	64·8	·10

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ood Hope.

This clearly shows that paroxysmal fevers and dysentery, diarrhœa, &c., occasioned the very high rate of admissions and deaths by miasmatic diseases at Cape Town; but these were the forms of disease under which the 59th had suffered so much in China, and the liability to which continued for a long time to affect it. Of the 41 cases of paroxysmal fevers among the troops on the Eastern Frontiers, a very large proportion occurred in a detachment of the same regiment at Fort Beaufort; indeed, it may be safely affirmed that they are unknown as endemic diseases at the Cape. Fevers of the continued type have been thrice as prevalent at Natal as on the Eastern Frontiers, but have not in any instance proved fatal. Ophthalmia has also been a source of considerable inefficiency at Natal. It will be observed that although dysentery and diarrhœa are much more prevalent on the Eastern Frontiers than at Natal, they do not amount, even there, to half the previous average.

ENTHETIC DISEASES have been much more prevalent at Cape Town than either on the Frontiers or at Natal, and have been twice as frequent as formerly.

TUBERCULAR DISEASES have given rise to more admissions and deaths at Natal than at the other stations, and have exceeded the previous average of the Cape command.

DISEASES OF THE NERVOUS SYSTEM have given rise to a very high ratio of mortality at Cape Town. Of the deaths three were from apoplexy in the 59th Regiment, and occurred during the first quarter after its arrival, one was from paralysis, also in the 59th, and three were caused by *delirium tremens* in the Royal Artillery. There was no death from the latter disease at Natal, and only one on the Eastern Frontiers, in the 2nd Battalion, 13th Regiment.

CORPORAL PUNISHMENT.—The proportion of cases in which this was inflicted was, at Cape Town, 3 per 1,000; at Natal, 3·6; and on the Eastern Frontiers, 6·5, the last being exactly the same as during the ten years 1837-46.

The question of the formation of a sanatorium at the Cape for invalids from China and India, having at different times occupied the attention of the authorities, it may be interesting to see what effect the climate produced upon the 59th Regiment, which had been rendered utterly non-effective by sickness in China. It landed on the 19th of January, and the admissions and deaths during the remainder of the year were as follows:—

Cape of Good H

	Admitted.	Died.	Annual ratio per 1,000 of Strength. Admitted.	Died.
19th January to 31st March	437	15	3,671	126·0
1st April to 30th June..	249	1	1,928	7·74
1st July to 30th September	213	..	1,216	..
1st October to 31st December	197	2	1,131	11·48

The rapid decrease in the amount of sickness is very satisfactory, and the high rate of mortality appears to have been at once arrested. In consequence of the sick of detachments at Cape Town of the Royal Artillery and Cape Mounted Rifles being mixed up with those of the 59th in the quarterly returns, we are unable to trace, so minutely as we could have wished, the progressive decrease in the different diseases, but it may be generally stated to have taken place chiefly in intermittent fever, dysentery, and diarrhœa.

II. *Invaliding.*

III. *Mean Daily Sick.*

Invalidin — **Mean sic**

The usual details on these subjects are omitted, as it is impossible to separate the returns of the 59th Regiment from the others, and the exceptional circumstances under which this corps was sent to the Cape would nullify any conclusions that might be drawn from the results.

Section IV.

On the Influence of Age on the Mortality.

Influenc age.

In Abstract No. XIII of Appendix will be found a statement of the ages of the troops serving at the Cape, and the deaths in each quinquennial period of life, of which the following is a summary:—

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	Under 20.	20—24.	25—29.	30—34.	35—39.	40 and upwards.	Total.
Strength	475	1,135	885	537	406	50	3,488
Deaths	..	9	13	5	6	3	36
Ratio of Deaths per 1,000 of Strength	..	7·93	14·69	9·31	14·78	·60	10·32

These results show that the mortality has not increased with age in the same rapid ratio as has been observed in other colonies, and was found to be the case at the Cape itself in the period from 1830 to 1836; but the numbers are too small to justify any positive conclusions being drawn from them, or even to warrant our expecting them to show a regular progression.

VIII. ON THE HEALTH OF THE TROOPS SERVING IN THE ISLAND OF MAURITIUS.

Section I.

Sickness and Mortality.

IN the beginning of 1859 the force in this island consisted of Royal Artillery, Royal Engineers, and the 2nd Battalion 5th Regiment, and it was augmented, in the end of July, by the arrival of the 61st Regiment from Bombay. The average strength throughout the year was 1,254, the admissions into hospital amounted to 1,540, and the deaths to 16, being in the annual ratio of 1,237 and 13·82 per 1,000. Compared with the average of the ten years 1837–46, these ratios show a considerable increase in the admissions, but a reduction to the extent of more than one-third in the deaths. The former, however, was chiefly owing to the sickness in the 61st, which arrived from India, and brought with it many men predisposed to disease from their previous service. *Mauritius.*

In addition to the 16 deaths, 4 occurred among invalids on their passage home and at Chatham, which raise the proportion to 16·04 per 1,000. The diseases by which the sickness and mortality have been occasioned are detailed in Abstract No. XII of Appendix, from which the following table has been compiled:—

	Strength, 1,254.				1859.		1838–54.	
		Died.			Ratio per 1,000.		Ratio per 1,000.	
	Admitted.	At Mauritius.	Invalids.	Total.	Admitted.	Died.	Admitted.	Died.
Class I.								
1. Miasmatic diseases ..	564	7	3	10	453·	8·03	383·8	11·59
2- Enthetic „ ..	92	..	..	..	73·9	..	78·4	..
3. Dietic „ ..	7	..	..	..	5·6	..	1·1	·07
3. Parasitic „ ..	2	..	..	..	1·6	..	1·	..
Class II.								
1. Diathetic diseases ..	11	..	..	..	8·8	..	6·2	·17
2. Tubercular „ ..	30	2	1	3	24·1	2·4	15·9	5·14
Class III. Diseases of the—								
1. Nervous system ..	50	1	..	1	40·2	·8	20·3	1·2
2. Circulatory „ ..	23	..	..	..	18·5	..	3·7	·41
3. Respiratory „ ..	198	2	..	2	159·	1·61	83·7	1·54
4. Digestive „ ..	125	1	..	1	100·4	·8	99·4	1·82
5. Urinary „ ..	4	..	..	..	3·2	..	3·1	·14
6. Reproductive „ ..	9	..	..	..	7·2	..	3·2	..
7. Locomotive „ ..	7	..	..	..	5·6	..	2·	·03
8. Integumentary „ ..	258	..	..	..	207·2	..	123·7	·07
Class IV.								
4. Diseases of Nutrition ..	..	..	..	..	..	..	·5	·03
Class V.								
1. Accidents	100	..	..	..	80·3	..	69·1	·17
4. Suicide	2	3	..	3	1·6	2·4	..	..
6. Corporal Punishment ..	17	..	..	..	13·7	..	7·	..
Diseases not stated ..	41	..	..	..	32·9	..	7·5	..
Total	1,540	16	4	20	1,236·8	16·04	909·6	22·38

This table shows the increase of the admissions into hospital to have been chiefly caused by miasmatic diseases, and diseases of the nervous, respiratory, and integumentary systems, while the reduction in the mortality has been in the miasmatic and tubercular diseases.

Miasmatic Diseases.

		1859.	1837–46.
Ratio per 1,000	Admitted..	453·	383·8
	Died	8·03	11·59

Mauritius

The admissions in 1859 have thus exceeded the previous average by 69 per 1,000, but the deaths have been 3½ per 1,000 under it. On subdividing this class, as in the preceding part of this report, the following results are obtained:—

Diseases.	1859.				1838–54.	
			Ratio per 1,000.		Annual ratio per 1,000.	
	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
Eruptive Fevers	..	..	..	..	·6	..
Paroxysmal „	62	..	49·4	..	·6	..
Continued „	84	3	67·	2·39	122·1	2·74
Dysentery, Diarrhœa, and Cholera	317	4	252·8	3·19	148·6	3·70
Sore Throat	17	..	13·6	..	6·4	..
Ophthalmia	30	..	23·9	..	59·5	..
Rheumatism	54	..	43·1	..	43·1	·07

This table shows the increase to have been in paroxysmal fevers and dysentery diarrhœa and cholera, while there has been a considerable reduction in continued fevers and in ophthalmia. The increase in paroxysmal fevers, however, was not attributable to service in the Mauritius. Of 62 admissions by this type 53 were in the 61st Regiment, which, as already mentioned, arrived in the end of July from India.

The increase in dysentery and diarrhœa however, was much more marked in the 2nd Battalion 5th Regiment, than in the 61st. That corps had arrived in the Mauritius from England early in November, 1858, at the commencement of the hot season, and suffered very much from bowel affections, which continued to prevail in it throughout the whole of 1859, the admissions by dysentery amounting to 88·7, and by diarrhœa to 15·5 per 1,000 of the strength, while the 61st had 54·5 of the former and 29·8 of the latter.

TUBERCULAR DISEASES have given rise to more admissions than formerly, but the mortality has not reached half the previous average.

DISEASES OF THE NERVOUS SYSTEM have been more than twice as numerous as formerly, but the increase has been in headaches and inflammation of the ear. There have been only five cases of *delirium tremens*, being in the ratio of 4 per 1,000 of the strength, and almost identical with the average of the previous 17 years. This presents a favourable contrast with the results of an earlier period—

Mauritius. 1823-36—when the annual average was as high as 17 per 1,000.

Diseases of the Respiratory System have considerably exceeded the average, principally from the number of cases of bronchitis in the 61st Regiment, and those of the integumentary system, from the great prevalence of boils and abscesses in the 5th Regiment.

Corporal Punishment was inflicted in 17 instances, being in the proportion of 13·7 per 1,000 of the strength, or nearly double the previous average. Thirteen of these were in the 2nd Battalion 5th Regiment, a newly-raised corps; 4 in the 61st, and none in the Ordnance. The ratio of corporal punishment in the two regiments respectively was 17·2 and 6·4 per 1,000 of mean strength.

Section II.

On the Extent of Invaliding.

Invaliding. During the year only 10 invalids from the Mauritius were discharged the service at Chatham, being 8 per 1,000 of the strength. Of these, 4 were affected with pulmonary, and 2 with cardiac disease, 2 with epilepsy, 1 with impaired vision, and 1 with chronic rheumatism.

Section III.

Mean Daily Sick.

Mean sick. The mean daily sick in the Mauritius throughout the year amounted to 61·15, or 48·76 per 1,000 of the strength. From this and the preceding data we deduce the average sickness to have been in the proportion of 17·80 days to each man serving, and the average duration of each case to have been 14·39 days. During the 19 years, 1818-36, the mean sick averaged 68 per 1,000, the sick time to each soldier 25 days, and the duration of each attack 20, so that with regard to all these, the preceding results show a marked improvement.

Section IV.

On the Influence of Age on the Mortality.

Mauritius.

Influence of age.

The returns of the 2nd Battalion 5th Regiment furnish the only available data on this subject, the 61st having been only a portion of the year in the Command. The following table shows the strength on 1st April, and the deaths throughout the year, arranged in quinquennial periods:—

Age	Under 20.	20—24.	25—29.	30—34.	35—40.	Total.
Strength	394	249	95	22	6	766
Deaths, including those of Invalids	4	6	1	..	2	13
Ratio per 1,000	11·63	24·09	10·53	..	333·3	16·97

The numbers are too few to justify any positive deductions, but we have recorded them here that they may be available on some future occasion.

eylon.

IX. On the Health of the Troops serving in the Island of Ceylon.

Section I.

Sickness and Mortality.

The force employed in Ceylon consisted of Royal Artillery, the 50th Foot, the Ceylon Rifle Regiment, and a corps of Gun Lascars.

I. White Troops.

The average strength of the white troops during the year was 913, the admissions into hospital amounted to 1,546 and the deaths to 29, being in the annual ratio of 1,693 and 31·76 per 1,000. During the ten years 1837–46, the admissions averaged 1,444 and the deaths 41·74 per 1,000, so that in 1859 the former were in excess of, but the latter one-fourth below the ratios of the previous period. To show accurately the mortality due to the climate of Ceylon, the deaths of three invalids must be added, which raise the total to 32, or 35·05 per 1,000 of the strength.

The diseases by which the admissions into hospital and deaths were caused will be found specified in Abstract No. XII of Appendix, from which the following table has been compiled:—

Ceylon.

	Strength, 913.				Annual ratio per 1,000.			
		Died.			1859.		1837–46.	
	Admitted.	At Ceylon.	Invalids.	Total.	Admitted.	Died.	Admitted.	Died.
Class I.								
1. Miasmatic diseases ..	570	11	3	14	624 ·3	15·3	821 ·6	27 ·17
2. Enthetic " ..	221	..	..	..	242·1	..	60 ·8	..
3. Dietic " ..	5	..	..	..	5 ·5	..	3 ·6	·06
4. Parasitic " ..	11	..	..	..	12·	..	·9	..
Class II.								
1. Diathetic diseases ..	8	..	..	..	8 ·8	..	9 ·8	·45
2. Tubercular " ..	17	2	..	2	18 ·6	2 ·2	16 ·6	4·28
Class III. Diseases of the—								
1. Nervous system ..	56	3	..	3	61 ·3	3 ·3	27 ·8	2·66
2. Circulatory " ..	17	..	..	..	18 ·6	..	4 ·7	·39
3. Respiratory " ..	95	1	..	1	104 ·1	1 ·1	77 ·1	1 ·36
4. Digestive " ..	213	9	..	9	233 ·3	9 ·86	151 ·8	4·73
5. Urinary " ..	5	1	..	1	5 ·5	1·1	2·	..
6. Reproductive " ..	1	..	..	..	1·1	..	1 ·3	..
7. Locomotive " ..	3	..	..	..	3 ·3	..	1 ·4	·13
8. Integumentary " ..	183	..	..	..	200 ·4	..	162·	·32
Class IV.								
4. Diseases of Nutrition ..	3	..	..	..	3·3	..	·1	·06
Class V.								
1. Accidents	121	1	..	1	132 ·5	1 ·1	92 ·5	·13
4. Suicide	..	1	..	1	..	1 ·1	..	..
6. Corporal Punishment ..	6	..	..	..	6 ·6	..	10 ·2	..
Diseases not stated ..	11	..	..	..	12·	..	..	..
Total	1,546	29	3	32	1693 ·3	35 ·06	1444 ·2	41 ·74

These results show a great diminution both in the admissions and deaths by miasmatic diseases, but a very considerable increase in diseases of the digestive organs, and also in the prevalence of venereal, points to which we shall refer more in detail in our observations on the principal classes of diseases.

MIASMATIC DISEASES.

		1859.	1837–46.
Annual ratio per 1000 of strength	Admitted	624 ·3	821 ·6
	Died at Ceylon ..	12·	27 ·17

Ceylon.

From this it appears that there has been a reduction of nearly one-fourth in the admissions, and more than a half in the deaths by these diseases. On subdividing the class the following results are obtained:—

	1859.		Annual Ratio per 1,000 of Strength.			
			1859.		1837—46.	
	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
Eruptive Fevers	..	..	..	..	·3	·19
Paroxysmal „	74	1	81·	1·09	56·8	1·23
Continued „	69	..	75·6	..	169·7	2·20
Dysentery, Diarrhœa, and Cholera	286	9	313·2	9·86	340·9	23·35
Sore Throat	16	..	17·5	..	8·7	..
Ophthalmia	47	..	51·5	..	175·4	..
Rheumatism	78	1	85·4	1·09	68·2	·13

This table shows an increase in the admissions by paroxysmal fevers, sore throat, and rheumatism, but a decrease in all the others, most marked in ophthalmia and continued fevers. The reduction in the mortality has been chiefly in dysentery, diarrhœa, and cholera. The cause of this will be evident if we examine the relative prevalence of the various diseases included under this term, which has been as follows:—

	Ratio per 1,000 of Strength.					
	Dysentery.		Diarrhœa.		Cholera.	
	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
1859	96·4	8·76*	210·3	..	6·6	1·09
1837-46	135·1	13·04	186·7	1·49	19·1	8·82

Thus it appears that while the reduction in the prevalence of dysentery, diarrhœa and cholera, has not been very great, the type of disease has undergone a material change; dysentery and cholera, the two most fatal forms, having become much less prevalent, while diarrhœa has given rise even to more than the former average of admissions.

Continued fevers have prevailed to only half, and ophthalmia to less than one third of their former extent.

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* The deaths of the three invalids are not included in this ratio, as we have no information respecting the number who died under similar circumstances during the previous period.

ENTHETIC DISEASES (Venereal) have given rise to four times the former average of admissions, but no explanation is offered in the reports of the medical officers of any circumstances to which this can be attributed. *Ceylon.*

TUBERCULAR DISEASES. The mortality by these has been little more than half the previous average, but as the admissions continue fully as high as before, this may perhaps be merely an irregularity arising from the small numbers under observation.

DISEASES OF THE NERVOUS SYSTEM have been much in excess of the previous average, the increase being confined to inflammation of the ear (*otitis*) and *delirium tremens*. The latter disease has furnished more than double the previous average of admissions, the ratio being 21·9 against 9·44 per 1,000 of the strength. Of the 20 cases which occurred 19 were in the 50th Regiment, being in the ratio of 24·64 per 1,000 of the mean strength of that corps.

DISEASES OF THE DIGESTIVE ORGANS show a very marked increase, the proportion of admissions having been 233, and of deaths 9·86 per 1,000, while in 1837-46 it only amounted to 152 and 1·36. The difference has been chiefly shown in inflammation of the liver, of which there were 118 cases and 8 deaths, being in the ratio of 129 and 8·76, while the average of the previous period was 49 and 3·70. In former statistical reports this disease was shown to be very prevalent and fatal, but we are unable to assign any reason for the great increase in 1859.

CORPORAL PUNISHMENT was the cause of 6 admissions, being in the proportion of 6·6 per 1,000 of the strength, or a reduction of one-third upon the previous average.

The numbers are too small to justify our going into much detail regarding the sickness and mortality at the different stations in the island, but the following table is submitted with a view to show the great improvement which has taken place at several of them, when compared with the results of the 17 years, 1820-36:—

				Ratio per 1,000 of Strength.		
				1859.		1820–36.
	Strength.	Admitted.	Died.	Admitted.	Died.	Died.
Colombo ..	445	746	9	1,676	20·22	51·9
Galle	78	127	1	1,628	12·82	23·
Trincomalee	171	389	13	2,275	76·02	91·4
Kandy.. ..	140	277	1	1,978	7·14	60·7

Ceylon. Thus, with the exception of Trincomalee, there has been a very great reduction in the mortality of all the stations. At Kandy, this has been most marked in the deaths by remittent fever and dysentery. The high rate which still prevails at Trincomalee is kept up by dysentery and inflammation of the liver, the former having been the fatal disease in seven, and the latter in five, out of thirteen deaths.

II. Black Troops.

The average strength of the black troops in 1859 was 1,564; the admissions into hospital among them were 1,133, and the deaths 16, being in the annual ratio of 724 and 10·19 per 1,000. In the ten years 1837-46, the average amounted to 1,011 and 26·7, so that there has been a marked decrease both in the sickness and mortality.

The following table, compiled from Abstract No. XII of Appendix, shows the influence of the principal classes of diseases upon the black troops:—

	1859.				1837-46.	
	Strength, 1,564.		Ratio per 1,000.		Ratio per 1,000.	
	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
Class I.						
1. Miasmatic diseases ..	584	5	373·4	3·18	505·4	15·79
2. Enthetic " ..	57	..	36·4	..	35·6	·15
3. Dietic " ..	1	..	·6	..	·3	..
4. Parasitic " ..	79	..	50·5	..	·2	..
Class II.						
1. Diathetic diseases ..	16	2	10·2	1·27	17·6	1·45
2. Tubercular	4	2	2·6	1·27	2·9	1·05
Class III. Diseases of the—						
1. Nervous system ..	11	1	7·	·64	16·3	1·84
2. Circulatory " ..	2	1	1·3	·64	·2	·05
3. Respiratory " ..	48	1	30·7	·64	50·9	2·04
4. Digestive " ..	32	1	20·5	·64	53·9	1·69
5. Urinary " ..	..	..	..	..	1·2	·05
6. Reproductive " ..	..	..	..	..	·7	..
7. Locomotive " ..	..	..	..	..	·9	·05
8. Integumentary " ..	217	..	138·8	..	253·3	·14
Class IV.						
4. Diseases of Nutrition ..	2	1	1·3	·64	·6	·32
Class V.						
1. Accidents	73	2	46·7	1·27	64·1	1·04
2. Battle	..	..	..	..	..	·95
4. Suicide	..	..	..	..	..	·05
6. Corporal Punishment ..	..	..	..	..	6·8	..
Diseases not stated	7	..	4·4	..	..	·05
Total	1,133	16	724·4	10·19	1010·9	26·71

Ceylon.

The most striking points in this table are the great reduction in the prevalence and mortality of miasmatic and the very low ratio of enthetic and of tubercular diseases. It will also be observed that diseases of the nervous and digestive systems, which were found to have increased greatly among the white, have not furnished half the previous average among the black troops.

In the miasmatic diseases the decrease in the admissions has been chiefly in eruptive fevers, continued fevers, and dysentery, diarrhœa and cholera, while there has been an increase, as in the case of the white troops, in paroxysmal fevers. The reduction in the mortality, however, has been almost entirely in dysentery, diarrhœa and cholera, the deaths by which formerly amounted to 11·45, but in 1859 were only 1·92 per 1,000.

The remarkable exemption from venereal disease among the black troops is explained by the large number of married men in the Ceylon Rifles, amounting to very nearly two-thirds of the whole, and by the fact, noted by the Medical Officer of the corps, that the soldier, if unmarried, has "at least one woman in his keeping, whom he styles his 'concubine,' and treats in every respect as his wife," and thus escapes the consequences of promiscuous intercourse.

There were no admissions by *delirium tremens*, either during the past year or the previous period of ten years, a circumstance accounted for by a large proportion of the men being Mahomedans, and forbidden by their religion from indulging in spirituous liquors. The reduction in the diseases of the digestive system has occurred in dyspepsia, colic, constipation, and inflammation of the liver. Of the latter, indeed, which was shown to have increased greatly among the white troops, not a single case occurred. There was no instance of corporal punishment among the black troops; the previous average was 6·8 per 1,000.

Section II.

On the Extent of Invaliding.

Invaliding.

In 1859 there were only two men discharged the service at Chatham, who had been invalided from Ceylon, one on account of weakly constitution, and the other of eye-disease.

Section III.

Mean Daily Sick.

Ceylon.

Mean sick.

The average number constantly sick of the white troops throughout the year amounted to 64·04 or 70·14 per 1,000 of the strength, from which we deduce the mean sick time to each soldier in the Command to have been 25·6 days, and the average duration of each case in hospital 15·12 days; results which correspond very closely with those obtained for the twenty years 1817-36.

The number constantly sick of the black troops was 39·85, which would give 9·3 days as the sick time to each soldier and 12·86 days as the duration of each case; but these results are probably affected by the large number of married men in the corps, and also by the number of small detachments where the men are not taken into hospital unless the disease is of so serious a nature as to require the man to be sent for treatment to head-quarters or the nearest large station.

Section IV.

Influence of Age on the Mortality.

Influence of age.

As no returns of the ages of the men serving in the 50th Regiment were forwarded to the War Office, our remarks must be confined to those of the Ceylon Rifles, the results of which are shown in the following table:—

Ages.	Strength.	Deaths.	Ratio of Deaths, per 1,000 of Strength.	Civil Population, England and Wales.
Under 20..	182	2	10·99	7·41
20–24	243	2	8·23	8·42
25–29	344	3	8·72	9·21
30–34	310	3	9·68	10·23
35–39	181	2	11·05	11·63
40 and upwards	69	1	14·49	13·55
Total	1,329	13	9·78	9·61

From this it appears that the mortality of the black troops in Ceylon has been rather lower than that of the general male population of England and Wales at corresponding ages, with the exception of those under twenty and above forty years of age, among whom the deaths have been in excess. There are no previous returns of the mortality of the black troops at different ages with which to compare these results.

X. On the Health of the Troops in the Australian Colonies.

Section I.

Sickness and Mortality.

Australian Colonies.

In this Command are comprised Australia, including Victoria, New South Wales, South Australia, and Western Australia; Tasmania, and New Zealand. The force consisted of Royal Artillery and Engineers, the 1st Battalion 12th, the 40th, and 65th Regiments. The average strength of the troops, with the admissions into hospital and deaths during 1859, were as follows:—

	Average Strength.	Admitted.	Died.	Rate per 1,000 of Strength.			
				1859.		1844–56.	
				Admitted.	Died.	Admitted.	Died.
Australia ..	1,380	913	14	661·5	10·1	..	..
Tasmania ..	334	139	5	416·1	15·	726	11·87
New Zealand ..	1,125	716	5	636·4	4·5	529	12·8

This table shows the rate of mortality to have been very low in New Zealand, but to have been above the usual average in Tasmania. The low ratio of admissions in the latter is attributable to the sick of a large detachment not being included in the returns. If the requisite deduction be made from the strength to compensate for this, the admissions amount to 530 per 1,000. It is probable that, owing to the number of detachments in all these colonies, the proportion of sickness among the troops is generally understated.

In addition to the deaths above recorded, one occurred on the passage home, and one at Chatham, among the invalids from Australia, which make the ratio of mortality 11·6 per 1,000 of the strength in that colony.

The diseases by which the admissions and deaths have been occasioned are stated in Abstract No. XIV of Appendix, from which the following table has been prepared:—

Class.	Order.	Stations	Australia.						Tasmania.						New Zealand.					
		Strength	1,380.						262 — 334.				1839–55. Ratio.		1,125				1846–55. Ratio p.1,000.	
		Diseases.		Died			Ratio p. 1,000.				Ratio p. 1,000.						Ratio p. 1,000.			
			Admitted.	In Australia.	Invalided.	Total Deaths.	Admitted.	Died	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
I.	1	Miasmatic diseases	238	3	..	3	172·4	2·17	27	..	103·0	..	236·4	1·82	133	2	118·2	1·8	146·5	1·04
	2	Enthetic .. „ ..	165	..	..	..	119·5	..	29	..	110·7	..	79·4	..	52	..	46·2	..	31·	·07
	3	Dietic .. „ ..	1	..	..	..	·7	..	..	..	..	..	3·3	..	2	..	1·8	..	·1	·07
	4	Parasitic .. „ ..	..	..	..	..	..	..	..	..	..	..	·5	..	2	..	1·8	..	·4	
II.	1	Diathetic.. „ ..	20	1	..	1	14·4	·72	..	..	..	..	3·9	·11	14	..	12·4	..	5·8	·21
	2	Tubercular „ ..	22	4	2	6	15·9	4·35	3	2	11·5	6·	10·	3·92	8	..	7·1	..	9·5	3·41
		Diseases of the—																		
III.	1	Nervous system	31	2	..	2	21·4	1·45	1	..	3·8	..	13·5	·91	39	..	34·7	..	9·5	·90
	2	Circulatory „ ..	14	1	..	1	10·1	·72	3	1	11·5	3·	6·3	·57	12	1	10·7	·9	6·7	·62
	3	Respiratory „ ..	97	..	..	..	71·9	..	18	1	68·7	3·	118·2	·91	135	..	120·	..	67·9	1·25
	4	Digestive „ ..	69	1	..	1	50·0	·72	12	1	45·8	3·	37 6	·45	59	1	52·4	·9	54·	·49
	5	Urinary „ ..	6	..	..	..	4·3	..	1	..	3·8	..	2·3	·11	3	..	2·7	..	2·	·35
	6	Reproductive „ ..	1	..	..	..	·7	..	..	..	..	..	·3	..	3	..	2·7	..	·2	..
	7	Locomotive „ ..	..	..	..	..	..	..	..	..	..	..	·9	..	5	..	4·4	..	·5	..
	8	Integumentary „ ..	107	..	..	..	77·5	..	12	..	45·8	..	112·2	·28	98	..	87·1	..	103·1	·14
IV.	4	DiseaseofNutrition	..	..	..	..	..	..	..	..	..	..	·1	..	1	..	·9	..	·1	..
V.	1	Accidents ..	105	2	..	2	76·	1·45	25	..	95·4	..	96·5	2·39	115	1	102·2	·9	68·8	2·22
	3	Homicide.. ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	·14
	4	Suicide	..	..	..	..	..	..	..	..	..	..	..	·34	..	..	..	..	..	.28
	6	CorpPun ment	1	..	..	..	·7	..	1	..	3·8	..	3·4	..	..	..	..	..	3·3	..
		Diseases not stated	36	..	..	..	26·	..	7	..	26·7	..	7·2	·06	35	..	31·1	..	8·1	·42
		Total ..	913	14	2	16	661·5	11·58	139	5	530·5	15·	732·0	11·87	716	5	636·4	4·5	517·5	11·61

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* It has been necessary to state the strength in this manner, as the deaths include those among all the troops in Tasmania, while the admissions among a large detachment, as already stated, have not been reported; the ratio per 1,000 admitted has therefore been calculated on a strength of 262, but that of the deaths upon 334.

Australian Colonies.

The points most deserving of remark in this table are the low ratio of admissions by enthetic diseases (venereal) the comparative exemption from tubercular diseases, and the great amount of diseases of the nervous system, particularly in New Zealand.

Miasmatic Diseases have prevailed in Australia to the same extent as among the infantry at home, but in New Zealand have been about one-fourth less. The diseases, however, are somewhat differently distributed, as will be seen by the following table:—

	Australia.		Tasmania.		New Zealand.		Infantry at Home.
	Admitted.	Ratio per 1,000 of Strength.	Admitted.	Ratio per 1,000 of Strength.	Admitted.	Ratio per 1,000 of Strength.	Ratio per 1,000 Admitted.
Eruptive Fevers ..	..	..	..	..	..	..	4·1
Paroxysmal „ ..	..	..	..	..	..	..	3·
Continued „ ..	20	14·5	2	7·6	3	2·7	29·
Dysentery, Diarrhœa, and Cholera ..	35	25·4	1	3·8	30	26·7	17·1
Sore Throat	37	26·8	5	19·1	10	8·9	35·5
Ophthalmia	97	70·3	17	64·9	36	32·	27·1
Rheumatism	47	34·1	1	3·8	44	39·1	49·1

Thus it appears that the Australian Colonies have been quite free from eruptive and paroxysmal fevers, and that continued fevers have been very rare. On the other hand, diarrhœa in Australia and New Zealand, and ophthalmia in Australia and Tasmania, have considerably exceeded the average among troops in the United Kingdom. Rheumatism has given rise to only one admission in Tasmania, and in the other two colonies has been less common than at home. The reduction in the admissions by miasmatic diseases in Tasmania in 1859 compared with the previous period, has taken place in continued fevers, dysentery and diarrhœa, and rheumatism.

Diseases of the nervous system have been a very frequent cause of admission into hospital in New Zealand, but have not given rise to any deaths. Of 39 cases 7 were of *delirium tremens* and 9 of headache. Five cases of *delirium tremens* were admitted in Australia.

Corporal Punishment was inflicted only on one occasion in Australia, and one in Tasmania. It was not resorted to in New Zealand during the course of the year.

Section II.

On the Extent of Invaliding.

Australian Colonies.

Invaliding.

The details of invaliding have not been kept separate for each of the colonies, but the number discharged at Chatham in 1859 of those sent home from them collectively, and the causes of disability, were as follows:—

Weakly Constitution	1
Eye Diseases	5
Wounds	1
Mental Disease	1
Epilepsy	3
Pulmonary Disease	6
Cardiac "	2
Rheumatism	4
Worn out	5
Total	28
Ratio per 1,000 of mean strength	9·86

From this it appears that pulmonary disease has been the most frequent cause of invaliding, giving rise, however, to a loss to the service of only 2·1 per 1,000. Next to it in frequency stand eye diseases; but considering the extent to which ophthalmia has prevailed in these colonies, the proportion finally discharged the service on account of them does not appear great.

Section III.

Mean Daily Sick.

Mean sick.

The average number constantly sick in Australia and Tasmania during the year 1859 was 55·51, or in the ratio of 33·81 per 1,000, and in New Zealand, 23·04 or 20·48 per 1,000. The latter ratio is so low as to lead to the supposition that the sick of some detachments may have been omitted, but it perhaps depended to some extent also on the very small proportion of venereal among the troops. From these figures, combined with the data in the preceding pages, we find the mean sick time to each soldier to have been 12·34 days in Australia and Tasmania, and 7·47 in New Zealand; and the average duration of each case of sickness to have been 19·26 days in the former, and 11·75 in the latter.

Section IV.

On the Influence of Age on the Mortality.

Australian Colonies.

Influence of age.

No returns of the ages of the men serving in the 40th Regiment having been received, the information under this head must be derived from those of the 1st Battalion 12th and the 65th Regiments, of which the following is a summary:—

	Under 20.		20—24		25—29		30—34		35—39		40 and upwards.		All Ages.	
	Strength.	Died.	Strength.	Died.	Strength.	Died.	Strength.	Died.	Strength.	Died.	Strength.	Died.	Strength.	Died.
1st Battalion 12th Regiment ..	5	..	222	..	138	2	79	2	95	3	29	1	568	6
65th Regiment	11	..	294	1	296	1	346	1	93	2	13	..	1053	5
Total	16	..	516	1	434	3	425	3	186	5	42	1	1621	13
Ratio per 1,000 of strength ..	..		1·94		6·91		7·06		26·59		23·81		8·02	
Civil Population at same Ages in healthy districts of England and Wales	5·83		7·30		7·93		8·36		9·		9·86		8·00	

From this table it will be seen that the mortality under 35 years of age in these two regiments, and including the deaths among the invalids, has been rather below that of the civil population in the healthy districts of England, and that the total mortality per 1,000 has been exactly the same as would have occurred in those districts, if the numbers living at each quinquennial period had been in the same proportions as in these corps.

XI. On the Health of the Troops serving in China.

Section I.

Sickness and Mortality.

hina.

The European troops in China consisted, in the beginning of 1859, of Royal Artillery and Engineers, the 2nd Battalion 1st Foot, and a detachment of the Medical Staff Corps. In the middle of October the 67th Regiment arrived from Calcutta, and in November and December the 1st Battalion 3rd Regiment, from the same place. The native troops consisted of Gun Lascars, the 12th Madras Native Infantry, and the 47th, 65th, and 70th Bengal Native Infantry Regiments.

I. White Troops.

The average strength of the European troops during the year was 1,550; among whom the admissions into hospital amounted to 4,314, and the deaths to 65, being in the ratio of 2,783, and 41·93 per 1,000 of the strength. But in addition to this mortality, 27 deaths occurred among invalids on their passage home, which increase the ratio to 59·35 per 1,000. The diseases by which the admissions and deaths were caused are detailed in Abstract No. XIV of Appendix, from which the following table has been compiled:—

China.

Strength, 1,550.		Deaths.			Ratio per 1,000.	
Diseases.	Admitted.	In China.	Invalids.	Total.	Admitted.	Died.
Class I.						
1. Miasmatic diseases ..	2,740	47	19	66	1767·8	42·58
2. Enthetic „ ..	538	..	..	..	347·1	..
3. Dietic .. „ ..	2	..	..	..	1·3	..
4. Parasitic „ ..	11	..	..	..	7·1	..
Class II.						
1. Diathetic Diseases ..	16	..	..	..	10·3	..
2. Tubercular „ ..	15	1	7	8	9·7	5·16
Class III.						
Diseases of the—						
1. Nervous system ..	76	3	..	3	49·	1·93
2. Circulatory „ ..	30	1	..	1	19·4	·64
3. Respiratory „ ..	160	5	..	5	103·2	3·23
4. Digestive „ ..	231	4	1	5	149·	3·23
5. Urinary „ ..	7	..	..	..	4·5	..
6. Reproductive „ ..	7	..	..	..	4·5	..
7. Locomotive „ ..	7	..	..	..	4·5	..
8. Integumentary „ ..	244	..	..	..	157·4	..
Class IV.						
4. Diseases of Nutrition..	42	..	..	..	27·1	..
Class V.						
1. Accidents	103	2	..	2	66·5	1·29
6. Corporal Punishment	5	..	..	..	3·2	..
Diseases not stated ..	80	2	..	2	51·6	1·29
Total	4,314	65	27	92	2783·2	59·35

This table shows that nearly two-thirds of the admissions and deaths have been occasioned by miasmatic diseases. On subdividing the class, the following results are obtained:—

	Admitted.	Died.	Annual Ratio per 1,000.	
			Admitted.	Died.
Eruptive Fevers	2	..	1·3	..
Paroxysmal „	1,588	14	1024·5	9·03
Continued „	370	8	238·7	5·16
Dysentery, Diarrhœa and Cholera	445	43	287·1	27·74
Sore Throat	7	..	4·5	..
Ophthalmia	200	..	129·	..
Rheumatism	113	..	72·9	..

China. From this it appears that paroxysmal fevers have been the cause of much the greatest amount of sickness, the admissions by them somewhat exceeding the total number of troops serving in the colony; 1,118 of the cases were reported as intermittent and 470 as remittent fevers. Dysentery and diarrhœa have been the most fatal diseases, having given rise to nearly half the mortality in the command.

ENTHETIC DISEASES have occasioned a considerable amount of inefficiency, the admissions by them having been as high as 347 per 1,000.

TUBERCULAR DISEASES have not been very prevalent, but the deaths, including those of invalids on their passage home, have amounted to 5·16, being considerably in excess of the ratio by the same diseases in Ceylon or India.

DISEASES OF THE NERVOUS SYSTEM have been the cause of a large number of admissions, and of these 31 have been on account of *delirium tremens,* being in the ratio of 20 per 1,000 of the strength. The prevalence of this disease varied greatly in the different corps, 3 cases having occurred in the 67th Regiment, 4 in the Royal Engineers, 5 in the 1st Foot, and 19 in the Royal Artillery, the latter being in the very high proportion of 64·8 per 1,000 of the strength.

None of the other classes of diseases appear to require comment.

Corporal Punishment was the cause of 5 admissions only, and of these 4 were in the 67th Regiment during the short period it was in the Command, and the other was in the 3rd Regiment, which was also one of the corps that arrived from India towards the end of the year.

II. NATIVE TROOPS.

The average strength of the native troops was 2,009, among whom the admissions into hospital amounted to 3,283, and the deaths to 109, being in the annual ratio of 1,634, and 53·73 per 1,000. We have no means of ascertaining whether any deaths occurred among the invalids from the native corps on the passage to India, or previous to their discharge from the service there.

The following table, compiled from Abstract No. XIV of Appendix, shows the principal classes of diseases by which the admissions into hospital and deaths were caused :—

China.

	Native Troops.				European Troops.	
	Strength, 2,009.		Ratio per 1,000.		Ratio per 1,000.	
	Admitted.	Died.	Admitted.	Died.	Admitted.	Died (exclusive of Invalids).
Class I.						
1. Miasmatic diseases	2,385	87	1187·2	43·3	1767·8	30·32
2. Enthetic „ ..	150	..	74·7	..	347·1	..
3. Dietic .. „ ..	10	..	5·	..	1·3	..
4. Parasitic „ ..	19	..	9·4	..	7·1	..
Class II.						
1. Diathetic diseases ..	22	2	10·9	·99	10·3	..
2. Tubercular „ ..	8	1	3·9	·49	9·7	·64
Class III.						
Diseases of the—						
1. Nervous system	27	3	13·4	1·49	49·	1·93
2. Circulatory „	4	..	2·	..	19·4	·64
3. Respiratory „	150	4	74·7	1·98	103·2	3·23
4. Digestive „	98	3	48·8	1·49	149·	2·59
5. Urinary „	5	..	2·5	..	4·5	..
6. Reproductive „	7	..	3·5	..	4·5	..
7. Locomotive „	3	..	1·5	..	4·5	..
8. Integumentary „	183	2	91·1	·99	157·4	..
Class IV.						
4. Diseases of Nutrition	145	7	72·2	3·	27·1	..
Class V.						
1. Accidents	60	..	29·9	..	66·5	1·29
6. Corporal Punishment	1	..	·5	..	3·2	..
Diseases not stated ..	6	..	3·	..	51·6	1·29
Total ..	3,283	109	1634·2	53·73	2783.2	41·93

This table shows the admissions among the native troops by miasmatic and enthetic diseases and diseases of the respiratory system to have been much lower, but the deaths by miasmatic diseases, exclusive of those among the invalids, to have been considerably higher than in the European portion of the force. If we analyse the effects of this class of diseases upon the two bodies of troops, we obtain the following results:—

	Native Troops.				European Troops.	
			Ratio per 1,000.		Ratio per 1,000.	
	Admitted.	Died.	Admitted.	Died.	Admitted.	Died (exclusive of Invalids).
Eruptive Fevers ..	2	..	1·	..	1·3	..
Paroxysmal „ ..	1,788	40	890·	19·91	1024·5	7·74
Continued „ ..	44	7	21·9	3·48	238·7	5·16
Dysentery, Diarrhœa, &c.	362	38	180·2	18·91	287·1	16·77
Sore Throat	1	..	·5	..	4·5	..
Ophthalmia	34	..	16·9	..	129·	..
Rheumatism	145	1	72·2	·49	72·9	..

China. From this it appears that, though paroxysmal fevers have been rather less prevalent among the native troops, they have given rise to more than double the mortality of the Europeans from the same cause. The natives have enjoyed a great exemption from fever of the continued type, and from ophthalmia; and dysentery and diarrhœa have been much less prevalent, but rather more fatal than among the Europeans.

ENTHETIC DISEASES have been a source of comparatively little inefficiency, the proportion per 1,000 of the strength being only 74·7, while among the Europeans it was 347.

TUBERCULAR DISEASES have also been rare, the admissions having been only 3·9, and the deaths ·49 per 1,000. The admissions among the Europeans were nearly thrice as high as, but the deaths, exclusive of those of invalids, were very little above, those of the natives.

DISEASES OF THE NERVOUS SYSTEM have been only one-fourth as prevalent among the native as the European troops, the difference being almost entirely in the admissions for headache and *delirium tremens.* Of the latter disease there has not been a single case among the native troops.

DISEASES OF THE DIGESTIVE SYSTEM have also been much less prevalent, the difference being shown chiefly in dyspepsia, inflammation of the liver, and hæmorrhoids.

CORPORAL PUNISHMENT.—There was only one admission into hospital on this account. It occurred in the 65th Bengal Native Infantry, in the last quarter of the year. It may be remembered that all the cases among the European troops occurred during the same quarter, and in regiments which had just arrived from India.

Section II.

On the Extent of Invaliding.

Invaliding. The number of invalids who arrived in this country from China was 83, being in the ratio of 53½ per 1,000 of the strength. Of these, some were sent to join the depôts of their regiments and others were still at Chatham at the close of the year, but we are unable to state the numbers in each class.

There were only 13 finally discharged the service at Chatham, in 1859, being in the ratio of 8·4 per 1,000 of the strength. The disabilities on account of which they were discharged were as follows:—

China.

Invaliding.

Wounds in action	2
Ordinary Wounds	1
Hernia	1
Mental Disease	1
Epilepsy	1
Pulmonary Disease	5
Cardiac "	2
Total	13

The number discharged for pulmonary consumption, added to the deaths in China and among invalids on the passage home, shows a loss to the service by that disease of 7·73, a result which affords strong presumptive evidence against the theory of the antagonism between intermittent fever and phthisis. Had that theory been correct, the antagonism would surely have been developed to its full extent at a station where intermittent fever prevails to the extent of 720 per 1,000 of the force, or, in other words, where the admissions into hospital by it amount in number to nearly three-fourths of the men employed.

Section III.

Mean Daily Sick.

Mean sick.

The average daily sick throughout the year amounted, among the European troops, to 200·5, and among the native to 178·1, being in the ratio of 129·35 and 88·65 per 1,000 of the strength. Hence we deduce the average sick time to each soldier, and the average duration of each case, to have been as follows :—

	Average sick time to each man.	Average duration of each case.
	Days.	Days.
European Troops	47·21	16·96
Native "	32·36	19·80

Thus it appears, that while the number constantly sick, and the sick time to each soldier, are higher among the Europeans, the duration of disease is greater among the natives.

Section IV.

Influence of Age on the Mortality.

Influence of age.

In consequence of the returns on this subject being defective, we are unable to submit the usual tables.

APPENDIX TO STATISTICAL REPORT FOR 1859.

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APPENDIX No. I.

T, showing the Admissions into Hospital and Deaths among the Troops serving in the United Kingdom in the year 1859.

	Household Cavalry.		Dragoon Gds. and Dragoons		Royal Artillery.		Royal Engineers		Military Train.		Foot Guards.		Infantry.		Depôt Battns.	
. .. ..	1,213		8,059		11,508		1,243		1,139		5,939		19,621		22,993	
ases.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
Diseases.																
smatic:																
. .. ..	1	..	27	2	76	1	5	..	6	..	11	..	16	2	33	2
. .. ..	5	..	3	..	1	..	..	..	..	..	..	..	8	..	10	..
. .. ..	2	..	..	..	24	..	1	..	..	..	2	..	27	..	31	1
.. ..	1	..	6	2	13	2	..	..	1	..	31	..	30	2	35	2
.. ..	..	..	4	..	..	..	..	..	..	..	..	..	8	..	..	..
. .. ..	1	..	1	..	2	..	..	..	2	..	..	..	7	..	3	..
.. ..	33	..	207	..	539	..	74	..	34	..	136	..	677	..	1073	1
Trachealis	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..
.. ..	..	..	7	..	4	..	..	..	..	..	..	..	19	..	87	..
.. ..	2	..	16	..	45	1	..	..	3	..	5	1	45	4	108	2
a Acuta ..	..	..	3	..	22	..	..	..	1	..	1	..	10	..	8	..
Chronica..	..	..	1	..	8	..	5	..	..	..	..	..	3	..	57	1
.. ..	41	..	181	..	218	..	33	..	19	..	195	..	322	..	433	1
iliosa ..	..	..	3	1	..	..	..	..	..	..	..	..	..	..	2	1
termittens	..	..	11	..	255	..	35	..	..	..	19	..	58	..	335	..
mittens ..	..	..	1	..	14	..	1	..	..	..	..	..	..	..	13	..
phoides ..	..	..	..	..	..	..	..	..	..	..	4	..	1	..	..	..
phus ..	..	..	..	..	4	1	..	..	..	..	4	3	3	1	12	6
ntinua ..	17	..	224	3	295	3	66	..	32	1	187	2	566	12	988	17
ıs	..	..	31	..	108	..	73	..	..	..	5	..	2	..	18	..
.. .. ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..
.. .. ..	1	..	8	..	..	..	..	..	..	..	1	..	1	..	4	..
ia	5	..	133	..	244	..	18	..	30	..	61	..	531	..	813	..
cutus ..	37	..	235	..	389	..	82	..	47	..	175	..	563	1	903	3
hron. ..	3	..	141	..	253	1	7	..	19	..	13	..	400	..	601	1
.. .. ..	..	..	16	..	97	..	1	..	1	..	..	..	2	..	105	..
thetic:																
Primaria ..	54	..	1088	..	2613	..	179	..	245	..	944	..	2879	..	2896	..
ecundaria .	14	..	338	..	554	..	33	..	137	..	199	..	627	..	473	1
is	..	..	240	..	125	..	7	..	35	..	160	..	441	..	179	..
Syphil. ..	..	..	..	..	..	..	..	..	14	1	..	..	5	..	2	..
hilitica ..	..	..	15	..	22	..	1	..	8	..	3	..	24	..	44	..
.. .. ..	22	..	377	..	678	..	78	..	62	..	183	..	778	..	917	..
ea	38	..	1002	..	2271	..	253	..	125	..	392	..	2566	..	4066	..
, &c. ..	1	..	5	..	6	..	1	..	3	..	3	..	43	..	37	..
(Gonorr.)..	13	..	117	..	220	..	25	..	23	..	90	..	340	..	475	..
Urethræ ..	3	..	21	..	28	1	2	..	6	..	12	..	28	..	43	1
.. .. ..	1	..	41	..	58	..	3	..	3	..	21	..	106	..	61	..
Dietic:																
.. ..	..	..	3	..	1	..	1	..	..	..	..	..	11	..	23	..
.. .. ..	..	..	3	..	..	..	..	..	..	..	..	..	..	..	2	..
ele	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..
.. ..	..	..	4	..	4	..	..	..	3	1	2	..	13	..	15	1

Appendix No. I.—*continued.*

	House-hold Cavalry.		Dragoon Gds. and Dragoons		Royal Artillery.		Royal Engineers		Military Train.		Foot Guards.		Infantry
Strength	1,213		8,059		11,508		1,243		1,139		5,939		19,621
Diseases.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.
4. Parasitic:													
Porrigo	..	..	..	..	..	..	..	..	..	..	2	..	28
Scabies	4	..	104	..	112	..	4	..	52	..	96	..	490
Tænia Solium	..	..	1	..	..	..	..	..	..	..	1	..	13
Ascaris Lumbricoides	..	..	..	..	..	..	..	..	..	..	..	..	1
Dracunculus	..	..	..	..	..	..	..	..	..	..	..	..	..
Vermes	..	..	..	..	6	..	..	..	1	..	1	..	1
Pediculi	..	..	..	..	2	..	..	..	..	..	..	..	..
II. *Constitutional Diseases.*													
1. Diathetic:													
Podagra	4	..	2	..	1	..	..	..	..	..	..	..	..
Lumbago..	5	..	13	..	38	..	9	..	..	..	3	..	29
Ischias	..	..	2	..	4	..	..	..	..	..	..	..	2
Anæmia	..	..	..	..	..	..	..	..	..	..	..	..	..
Anasarca..	1	..	7	..	16	..	..	..	2	..	4	..	7
Scirrhoma Pylori ..	..	..	..	..	..	..	..	..	..	..	..	..	2
Lupus	..	..	1	..	..	..	..	..	..	..	..	..	..
2. Tubercular:													
Scrofula	..	..	22	..	48	..	9	..	6	..	14	..	86
Abscessus Psoanus..	..	..	..	..	..	..	..	..	..	..	..	..	1
Morbus Coxarius ..	..	..	..	..	4	1	..	..	..	..	..	..	2
Phthisis Pulmon: ..	6	4	59	25	136	41	12	5	2	1	67	28	122
Hæmoptysis	3	..	13	2	36	..	4	..	3	..	11	..	34
Morbus Spinalis ..	..	..	..	..	..	..	..	..	..	..	..	..	4
III. *Local Diseases.*													
1. Nervous System:													
Meningitis	..	..	..	..	2	1	..	..	..	..	..	..	..
Encephalitis	..	..	..	..	1	1	..	..	1	1	..	..	1
Apoplexia	2	..	2	1	5	4	..	..	..	..	2	1	5
Paralysis..	..	..	7	3	23	1	8	1	6	..	8	1	7
Delirium Tremens..	6	..	16	2	30	1	7	..	..	..	2	..	32
Mania	..	..	3	..	17	1	..	..	..	..	1	..	3
Amentia	..	..	4	..	4	..	..	..	3	..	2	..	12
Epilepsia..	..	..	30	..	59	..	3	..	1	..	44	..	48
Chorea et Hysteria..	..	..	..	..	..	..	..	..	..	..	..	..	2
Cephalæa et Vertigo.	..	..	16	..	9	..	1	..	4	..	6	..	13
Tetanus	..	..	..	..	1	1	..	..	..	..	..	..	..
Hydrophobia	..	..	..	..	1	1	..	..	..	..	..	..	..
Neuralgia..	..	..	1	..	8	..	1	..	1	..	2	..	7
Odontalgia	2	..	2	..	2	..	1	..	..	..	..	..	5
Dysecœa	..	..	5	..	3	..	1	..	4	..	4	..	7
Otitis	..	..	9	..	52	..	13	..	4	..	14	..	77
Amaurosis	..	..	1	..	4	..	..	..	1	..	..	..	..
Strabismus	..	..	..	..	..	..	..	..	..	..	..	..	2
Cataractes	..	..	..	..	..	..	..	..	..	..	..	..	1
2. Circulatory System:													
Carditis	..	..	10	3	17	..	2	1	2	..	1	..	18
Pericarditis	..	..	..	..	..	..	..	..	3	..	2	1	7
Hypertrophia cordis .	..	..	1	..	..	..	..	..	..	..	..	..	..
Morbus Cordis ..	..	..	16	1	99	3	2	..	5	1	8	2	74

Appendix No. I.—*continued.*

	Household Cavalry.		Dragoon Gds. and Dragoons		Royal Artillery.		Royal Engineers		Military Train.		Foot Guards.		Infantry.		Depôt Battns.	
.. ..	1,213		8,059		11,508		1,243		1,139		5,939		19,621		22,993	
ases.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
Cordis ..	..	..	1	..	7	..	..	..	3	..	1	..	16	..	8	1
Aortæ ..	..	..	1	1	..	..	..	..	..	..	..	..	1	1	..	..
.. ..	1	1	3	1	4	2	..	..	..	..	1	1	1	..	8	4
toris ..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..
.. ..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..
.. ..	..	..	2	..	10	..	..	..	2	..	..	..	16	..	17	..
.. ..	4	..	..	..	..	..	..	..	..	..	..	..	3	..	1	..
gia	..	..	..	..	3	..	..	..	..	..	..	..	..	..	..	..
iratory em:																
.. ..	1	1	1	..	..	..	..	..	..	..	1	1	3	1	2	1
Acuta ..	73	1	536	1	865	3	130	..	120	..	416	1	1445	5	2280	14
Chronica .	2	..	68	..	201	..	13	..	3	..	15	..	230	5	343	14
.. ..	4	..	9	..	39	..	..	..	5	..	10	1	36	..	96	..
ax	..	..	3	..	..	..	..	..	..	..	..	..	1	1	3	1
.. ..	2	1	37	3	30	2	3	1	4	..	19	1	102	9	123	21
Pulm: ..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..
Dyspnœa.	..	..	6	1	4	..	4	..	..	..	2	..	19	..	42	..
a	..	..	..	..	6	..	..	..	..	..	..	..	..	..	..	..
.. ..	..	..	2	..	1	..	..	..	..	..	1	..	11	..	7	..
ia	..	..	4	..	17	..	5	..	..	..	..	..	2	..	13	..
ve System :																
s	..	..	12	..	..	..	..	..	..	..	..	..	..	..	6	..
.. ..	..	..	1	1	2	..	1	..	..	..	..	..	7	4	4	1
.. ..	..	..	1	..	6	1	..	..	..	..	..	..	4	..	6	1
.. ..	..	1	1	..	5	..	..	..	..	..	1	1	1	1	4	..
.. ..	..	..	6	..	7	..	..	..	..	..	6	..	39	..	65	..
.. ..	12	..	65	..	125	..	5	..	7	..	57	..	225	..	285	1
.. ..	10	..	12	1	45	..	18	..	3	..	18	..	59	..	69	..
sis	..	..	1	..	1	..	4	..	..	..	..	..	4	..	6	2
is	2	..	45	..	53	..	..	..	4	..	7	..	72	..	122	..
guinalis ..	1	..	6	..	17	..	..	..	1	..	11	..	31	..	14	..
moralis ..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..
ano	2	..	6	..	17	..	2	..	..	..	2	..	8	..	20	..
ani	..	..	1	..	..	..	..	..	..	..	..	..	..	..	2	..
.. ..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	2	..
Acuta ..	..	..	6	..	18	..	..	..	1	..	1	..	9	..	35	..
Chronica. .	..	..	3	..	25	..	1	..	..	..	1	..	16	..	80	12
.. ..	7	..	21	..	66	..	2	..	4	..	17	1	76	2	79	1
.. ..	..	..	2	2	2	2	..	..	..	..	1	1	7	1	13	1
.. ..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..
.. ..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..
.. ..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..
System :																
.. ..	..	..	3	..	5	..	..	..	..	..	..	..	6	2	4	..
.. ..	..	..	..	..	..	..	..	..	1	1	1	1	1	1	2	1
Dysuria. .	..	..	..	..	5	..	..	..	..	..	..	..	1	..	..	..
.. ..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..
a	..	..	1	..	4	..	..	..	2	..	1	..	1	..	5	..
.. ..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..
esicæ ..	..	..	..	..	5	..	..	..	..	..	..	..	..	..	..	..
enalis ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..

Appendix No. I.—*continued.*

	House-hold Cavalry.		Dragoon Gds. and Dragoons		Royal Artillery.		Royal Engineers		Military Train.		Foot Guards.		Infantr	
Strength	1,213		8,059		11,508		1,243		1,139		5,939		19,621	
Diseases.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	
Cystitis	..	..	2	1	2	..	..	..	..	..	1	..	1	..
Fistula in Perineo ..	..	..	1	..	..	..	..	..	..	..	..	..	4	..
Diabetes	1	1	..	..	3	..	..	..	..	..	..	..	1	..
Dysuria	..	..	1	..	..	..	1	..	1	..	..	..	4	..
Enuresis	..	..	4	..	2	..	1	..	1	..	1	..	9	..
6. Reproductive System :														
Varicocele	..	..	2	..	1	..	..	..	..	..	..	..	8	..
Hydrocele	1	..	8	..	10	..	1	..	..	..	8	..	6	..
Orchitis (not Gon:)	..	..	12	..	..	..	1	..	..	..	..	..	..	..
Sarcocele	..	..	..	..	12	..	..	..	..	..	..	..	..	..
Fungus Scroti	..	..	..	..	1	..	..	..	..	..	..	..	..	..
Urethritis	..	..	1	..	..	..	..	..	..	..	..	..	4	..
Spermatorrhœa ..	..	..	..	..	..	..	..	..	..	..	..	..	2	..
Hypospadias	..	..	..	..	..	..	..	..	..	..	..	..	..	..
7. Locomotive System :														
Arthritis	..	..	3	..	6	..	1	..	..	..	..	..	24	
Hydrarthrus	..	..	2	..	..	..	..	..	..	..	..	..	1	.
Synovitis	..	..	..	..	13	..	..	..	..	..	..	..	11	.
Contractura	..	..	2	..	..	..	2	..	..	..	1	..	1	.
Periostitis	..	..	8	..	6	..	..	..	2	..	2	..	4	.
Caries	..	..	1	..	2	..	..	..	..	..	..	..	1	.
Necrosis	..	..	2	..	..	..	..	..	1	..	1	..	3	.
8. Integumentary System :														
Urticaria	1	..	2	..	2	..	..	..	3	..	4	..	7	.
Eczema	3	..	15	..	19	..	..	..	1	..	9	..	68	.
Herpes	1	..	6	..	..	..	..	..	1	..	2	..	23	.
Impetigo	..	..	..	..	..	..	..	..	2	..	6	..	44	.
Lepra	..	..	1	..	..	..	..	..	3	..	..	..	..	.
Psoriasis	..	..	19	..	..	..	..	..	..	..	3	..	41	.
Lichen	..	..	..	..	..	..	..	..	..	..	..	..	4	.
Acne	..	..	3	..	..	..	..	..	..	..	2	..	8	.
Roseola	..	..	1	..	..	..	..	..	..	..	..	..	2	.
Morbi Cutis	3	..	20	..	336	..	8	..	10	..	23	..	141	.
Phlegmon et Absc:	75	..	831	1	1003	2	167	..	86	..	420	1	1513	.
Paronychia	2	..	49	..	58	..	1	..	4	..	8	..	43	.
Ulcus	7	..	343	..	474	..	21	..	71	..	106	..	592	.
Pernio	..	..	2	..	..	..	..	..	..	..	..	..	..	.
Tumores	..	..	6	1	7	..	1	..	1	..	..	..	26	.
Rupia	..	..	..	..	..	..	..	..	..	..	..	..	..	
Prurigo	..	..	..	..	..	..	..	..	..	..	..	..	..	
Tinea Capitis	..	..	..	..	..	..	..	..	..	..	..	..	..	
IV. ***Developmental Diseases.***														
4. Diseases of Nutrition :														
Cachexia	1	..	..	..	3	..	..	..	..	..	..	..	5	
Debilitas	2	..	3	..	78	..	17	..	..	..	8	..	44	

Appendix No. I.—*continued.*

	Household Cavalry.		Dragoon Gds. and Dragoons		Royal Artillery.		Royal Engineers		Military Train.		Foot Guards.		Infantry.		Depôt Battns	
1	1,213		8,059		11,508		1,243		1,139		5,939		19,621		22,993	
iseases.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	
nt Deaths or *Diseases.* ccidental:																
io	1	..	14	..	27	..	4	..	3	..	16	..	69	..	65	
.. .. ..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	
ɔ	..	..	..	..	8	1	..	..	..	..	..	..	..	..	..	
sio	..	..	..	1	3	4	..	1	..	..	..	3	2	7	..	
ia..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
a	6	..	43	..	52	3	6	..	8	..	10	..	59	2	62	
tio	..	..	1	..	5	..	..	..	..	..	..	..	1	1	2	
ɔ	60	..	447	..	578	1	46	..	49	..	85	..	476	1	703	
tio	..	..	..	..	1	..	..	..	..	..	..	..	2	..	3	
ssio Cerebri..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	
Sclopetarium	..	..	1	..	3	..	7	..	1	..	..	..	7	1	37	
Incisum ..	8	..	119	..	244	..	13	..	22	..	91	..	249	..	268	
a..	2	..	16	..	9	..	2	..	1	..	..	..	8	..	10	
tio	11	..	112	..	191	..	26	..	14	..	77	..	316	..	280	
e Pedis ..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	
s Ferreas ..	..	..	..	..	..	..	..	..	..	..	..	1	..	2	..	
Suicidal:																
sio	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	
lium	..	..	..	..	..	1	..	..	..	..	..	..	1	..	..	
Sclopetarium	..	..	1	4	..	1	..	..	..	..	..	..	..	2	..	
Incisum ..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	
io	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	
m		..	..	..	..	..	..	..	..	..	..	..	..	..	..	
nitus	..	..	40	..	82	..	..	..	21	..	10	..	107	..	160	
tated																
d as Obser-	19	..	33	..	100	..	4	..	12	..	63	..	214	..	417	
al	653	10	7908	64	14,877	92	1579	9	1439	7	4701	54	18,915	149	26,421	31

APPENDIX No. II.

ABSTRACT, showing the Average Daily Sick among the Troops serving in the United Kingdom during the year 1859.

Cavalry.		
Household Cavalry	1st Life Guards	9·30
	2nd "	13·
	Royal Horse Guards	12·51
		34·81
Dragoon Guards and Dragoons	4th Dragoon Guards	38·
	5th "	24·
	1st Dragoons	29·
	2nd "	26·33
	3rd Light Dragoons	49·54
	4th "	30·
	5th Lancers	31·30
	10th Hussars	29·50
	11th "	25·16
	13th Light Dragoons	30·
	15th Hussars	44·11
	16th Lancers	20·12
	18th Hussars	35·
		412·06
Military Train	Military Train, 3rd Battalion	21·6
	" 4th "	20·
	" 5th "	16·2
	" 6th "	24·
		81·8

Infantry.		
Foot Guards	Grenadier Guards	119·
	Coldstream Guards	94·90
	Scots Fusilier Guards	93-52
		307·42
Infantry of the Line	9th Foot, 1st Battalion	48·
	11th " "	65·94
	" " 2nd Battalion	56·22
	12th " "	35·13
	14th " "	37·
	15th " 1st Battalion	42·
	16th " "	39·38
	" " 2nd Battalion	40·
	17th " "	39·
	18th " "	52·
	19th " "	52·35
	20th " "	42·
	21st " "	42·44
	22nd " 1st Battalion	21·50
	24th " 2nd Battalion	51·17
	30th "	24·90
	36th "	53·45
	47th "	35·17
	55th "	42·22
	60th " 4th Battalion	53·77
	76th "	41·50
	96th "	38·39
	Rifle Brigade, 1st Battalion	45·44
		998·97

APPENDIX No. III.

ABSTRACT, showing the Ages of the Troops serving in the United Kingdom, and the Deaths at each Age, during the Year 1859.

Corps.		Under 20 Years.		20—24.		25—29.		30—34.		35—40.		40 & upwards.		Total.	
		Strength.	Died.	Strength.	Died.	Strength.	Died.	Strength.	Died.	Strength.	Died.	Strength.	Died.	Strength.	Died.
Household Cavalry.	1st Life Guards	30	..	98	1	103	..	68	1	67	2	46	1	412	5
	2nd „ „	25	..	86	..	90	..	81	1	67	..	49	1	398	2
	Royal Horse Guards	28	..	112	..	99	2	72	..	52	1	38	..	401	3
		83	..	296	1	292	2	221	2	186	3	133	2	1,211	10
Dragoon Guards and Dragoons.	4th Dragoon Guards	134	2	293	..	115	4	49	..	33	1	21	..	645	7
	5th „ „	76	..	358	..	100	1	38	..	33	..	13	..	618	1
	1st Dragoons	104	1	294	2	110	1	58	1	34	..	20	..	620	5
	2nd „	124	..	290	1	138	2	39	1	19	1	10	..	620	5
	3rd Light Dragoons	296	1	103	3	126	1	62	2	33	..	6	..	626	7
	4th „ „	100	1	294	..	150	3	46	2	19	1	31	..	640	7
	5th Lancers	418	..	142	..	46	1	14	..	5	1	2	..	627	2
	10th Hussars	152	..	209	..	107	1	104	..	38	..	10	..	620	1
	11th Hussars	147	2	336	3	84	..	30	2	9	..	20	1	626	8
	13th Light Dragoons	172	1	272	1	95	..	47	..	24	..	11	1	621	3
	15th Hussars	155	1	312	2	57	1	42	..	29	1	28	1	623	6
	16th Lancers	98	..	295	1	104	1	46	1	30	..	52	5	625	8
	18th Hussars	193	2	306	1	80	1	25	..	9	..	8	..	621	4
		2,169	11	3,504	14	1,312	17	600	9	315	5	232	8	8,132	64

Appendix No. III.—*continued.*

Corps.			Under 20 Years.		20—24.		25—29.		30—34.		35—40.		40 & upwards.		Total.	
			Strength.	Died.	Strength.	Died.	Strength.	Died.	Strength.	Died.	Strength.	Died.	Strength.	Died.	Strength.	Died.
Military Train.	3rd Battalion..	.. ..	237	..	61	2	12	..	4	..	5	1	3	..	322	3
	4th "	.. ..	35	..	214	..	47	..	12	..	8	..	6	..	322	..
	5th "	.. ..	45	..	197	3	56	..	13	..	6	..	1	..	318	3
	6th "	.. ..	43	..	181	..	66	..	18	1	8	..	6	..	322	1
			360	..	653	5	181	..	47	1	27	1	16	..	1,284	7
Foot Guards.	Grenadier Guards ..	1st Battalion	90	1	459	7	193	3	66	2	43	5	21	1	872	19
		2nd " ..	86		505		152		40		40		8		831	
		3rd " ..	116		244		322		86		62		18		848	
	Coldstream Guards..	1st " ..	110	4	338	10	280	7	84	1	48	2	17	..	877	24
		2nd " ..	74		484		150		57		47		16		828	
	Scots Fusilier Gurds	1st " ..	50	..	373	4	253	2	111	3	57	2	14	..	858	11
		2nd " ..	105		458		188		53		43		9		856	
			631	5	2,861	21	1,538	12	497	6	340	9	103	1	5,970	54

Appendix No. III.—*continued.*

	Corps.	Under 20 Years.		20—24.		25—29.		30—34.		35—40.		40 & upwards.		Total.	
		Strength.	Died.	Strength.	Died.	Strength.	Died.	Strength.	Died.	Strength.	Died.	Strength.	Died.	Strength.	Died.
Infantry Regiments*	10th Foot, 2nd Battalion	334	1	316	3	131	1	44	..	15	..	9	..	849	5
	11th „ 1st „	110	1	337	4	167	2	103	4	33	1	10	1	760	13
	11th „ 2nd „	353	..	263	3	165	2	9	..	5	..	..	..	795	5
	12th „ 2nd „	131	1	239	1	107	..	138	2	162	4	30	..	807	8
	15th „ 1st „	178	2	353	5	145	..	123	2	50	1	1	..	850	10
	16th „ 1st „	209	1	349	2	121	1	107	2	63	1	9	..	858	7
	17th „ 2nd „	434	3	221	2	97	2	22	..	19	..	2	..	795	7
	18th „ 2nd „	381	..	280	2	97	1	8	..	21	..	6	..	793	3
	19th „ 2nd „	408	6	262	..	97	..	21	1	12	1	6	..	806	8
	20th „ 2nd „	292	1	169	..	71	1	16	..	17	..	5	..	570	2
	21st „ 2nd „	323	..	71	1	61	..	50	..	13	..	3	1	521	2
	22nd „ 1st „	109	..	344	1	219	1	91	..	97	2	12	..	872	4
	24th „ 2nd „	354	3	126	1	223	1	91	..	17	..	12	..	823	5
	36th „	48	1	470	2	158	1	143	1	28	..	2	..	849	5
	47th „	99	..	405	4	195	2	98	1	24	..	2	..	823	7
	76th „	188	1	240	2	187	..	178	2	47	1	5	..	845	6
	96th „	115	1	348	1	235	3	110	1	53	1	11	..	872	7
	Rifle Brigade, 1st Battalion	54	2	475	4	216	3	68	1	34	1	4	..	851	11
		4,120	24	5,268	38	2,692	21	1,420	17	710	13	129	2	14,339	115
	† Depôt Battalions	6,334	40	4,740	48	2,502	31	1,392	28	1,580	60	536	24	17,084	231

* The 1st Battalion, 6th Foot; 2nd Battalion, 14th Foot; 2nd Battalion, 16th Foot; 30th Foot; 55th Foot; and 4th Battalion, 60th Foot, are not included in the above, the returns of ages not being available.

† It has not been deemed necessary to give the details of each Depôt separately as the results can only be considered as approximative, in consequence of the frequent changes in their composition, during the year, from the number of recruits joining and drafts leaving them to proceed to the service companies.

APPENDIX No. IV.

Abstract, showing the Number of Men belonging to the Regiments serving at Home who were vaccinated during the 15 months from October 1858 to December 1859.

	Results.	In those who bore marks of previous Small-pox.	In those who bore good marks of previous Vaccination.	In those who bore doubtful marks of previous Vaccination.	In those who bore no marks of previous Vaccination or Small-pox.	Total.
Soldiers, not Recruits..	A perfect vaccine pustule	223	1,301	140	155	1,819
	A modified do.	108	552	173	53	886
	A failure in	207	1,219	163	109	1,698
	Total	538	3,072	476	317	4,403
Recruits ..	A perfect vaccine pustule	900	6,322	443	974	8,639
	A modified do.	481	3,597	261	374	4,713
	A failure in	1,190	6,345	332	467	8,334
	Total	2,571	16,264	1,036	1,815	21,686

Abstract, No. of Appendix, showing the Number of Men belonging to the Embodied Regiments of Militia who were vaccinated during the 15 months, October 1858 to December 1859.

	Results.	In those who bore marks of previous Small-pox.	In those who bore good marks of previous Vaccination.	In those who bore doubtful marks of previous Vaccination.	In those who bore no marks of previous Vaccination or Small-pox.	Total.
Soldiers, not Recruits..	A perfect vaccine pustule	87	304	101	61	553
	A modified do.	51	244	32	26	353
	A failure in ..	128	484	32	48	692
	Total	266	1,032	165	135	1,598
Recruits ..	A perfect vaccine pustule	263	1,049	93	172	1,577
	A modified do.	159	884	39	31	1,113
	A failure in	327	1,623	92	91	2,133
	Total	749	3,556	224	294	4,823

APPENDIX No. V.

ABSTRACT, showing the Admissions into Hospital and Deaths among the Troops serving in the Mediterranean in the year 1859.

Stations	Gibraltar.		Malta.		Ionian Islands.		Native Troops. R. Malta Fencibles	
Strength	5,153		5,310		3,660		610	
Diseases.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
I. *Zymotic Diseases.*								
1. Miasmatic Diseases :								
Variola	15	1	..	..	..	..	..	..
Varicella	3	..	..	..	1	..	..	..
Morbilli	..	..	1	..	..	..	1	..
Scarlatina	1	..	..	..	82	2	..	..
Parotitis	5	..	6	..	..	..	..	..
Tonsillitis	89	..	79	..	80	..	10	..
Dysenteria Acuta	92	4	237	4	20	..	..	..
„ Chronica	4	..	15	1	..	..	..	..
Diarrhœa	292	..	551	5	191	1	18	..
Cholera Biliosa	1	..	..	..	3	..	..	..
Febris Intermittens	15	..	28	..	44	..	..	..
„ Remittens	..	..	59	..	24	..	..	..
„ Typhus	2	..	5	3	..	..	1	1
„ Typhoides	..	..	..	..	56	9	..	..
„ Continua	552	15	1431	44	557	14	8	1
Erysipelas	3	..	5	..	4	..	1	..
Anthrax	..	..	2	..	..	..	..	..
Ophthalmia	255	..	286	..	190	..	53	..
Rheumatismus Acutus	91	..	214	2	57	..	10	..
„ Chronica	52	..	74	..	48	..	7	..
2. Enthetic Diseases :								
Syphilis Primaria	506	..	171	..	157	..	7	..
„ Secundaria	65	..	145	..	44	..	2	..
Ulcus Penis	10	..	26	..	33	..	..	..
Cachexia Syphiloidæa	..	..	1	..	..	..	..	..
Iritis Syphilitica	7	..	13	..	4	..	..	..
Gonorrhœa	489	..	216	..	164	..	19	..
Phymosis, &c.	5	..	1	..	2	..	..	..
Orchitis (Gonorrhœal)	97	..	107	..	23	..	3	..
Strictura Urethræ	10	..	14	..	3	..	..	..
Bubo	136	..	76	..	72	..	1	..
Verrucæ	9	..	23	..	6	..	1	..
3. Dietic Diseases :								
Scorbutus	..	..	5	..	..	..	..	..
Ebriositas	..	2	9	..	1	..	..	..
4. Parasitic Diseases :								
Scabies	44	..	53	..	9	..	2	..
Porrigo	..	..	25	..	..	..	..	..
Vermes	8	..	7	..	12	..	..	..
II. *Constitutional Diseases.*								
1. Diathetic Diseases :								
Lumbago	10	..	9	..	1	..	2	..
Ischias	..	..	1	..	..	..	..	..
Anasarca	3	..	..	..	2	1	..	..
Tumores	25	..	1	..	5	..	1	..

Appendix, No. V.—*continued.*

Stations	Gibraltar.		Malta.		Ionian Islands.		Native Troops. R. Malta Fencibles.	
Strength	5,153		5,310		3,660		610	
Diseases.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
2. Tubercular Diseases:								
Scrofula	3	..	10	..	3	..	..	..
Morbus Coxarius	..	..	1	..	..	..	..	..
Phthisis Pulmonalis	18	2	40	8	10	2	1	1
Hæmoptysis	10	..	24	1	15	1	..	..
III. *Local Diseases.*								
1. Of the Nervous System:								
Encephalitis	3	..	1	..	..	..	..	..
Cephalæa et Vertigo	6	..	10	..	8	..	..	..
Apoplexia	..	..	3	3	..	..	..	..
Paralysis	8	..	6	1	5	1	1	..
Delirium Tremens	26	1	12	1	4	1	..	..
Mania	..	..	5	..	2	1	..	..
Amentia	3	..	3	..	..	..	..	..
Nostalgia	..	..	..	..	1	..	..	..
Epilepsia	12	..	18	1	15	1	5	..
Tetanus	..	..	..	..	1	1	..	..
Neuralgia	1	..	3	..	1	..	..	..
Odontalgia	..	..	2	..	..	..	..	..
Dysecœa	..	..	..	..	3	..	..	..
Otitis	19	..	28	..	11	..	2	..
Amaurosis	2	..	1	..	2	..	..	..
Cataractes	1	..	1	..	..	..	..	..
2. Of the Circulatory System:								
Carditis	33	..	3	..	..	..	..	..
Pericarditis	..	..	2	..	..	..	..	..
Morbus cordis	14	1	32	3	13	..	..	..
Aneurisma	1	1	3	1	1	2	..	..
Palpitatio	5	..	5	..	..	..	1	..
Varix	1	..	5	..	..	..	..	..
3. Of the Respiratory System:								
Bronchitis Acuta	276	..	376	4	152	..	27	..
„ Chronica	34	..	33	..	51	..	9	..
Pleuritis	14	..	14	..	10	..	1	..
Pneumonia	11	..	52	5	7	..	2	1
Apoplexia Pulmonalis	1	1	..	..	..	..	..	..
Asthma et Dyspnœa	10	..	5	..	3	..	1	..
Epistaxis	2	..	..	..	..	..	..	..
Pleurodynia	2	..	1	..	9	..	..	..
4. Of the Digestive System:								
Peritonitis	4	1	..	..	1	1	..	..
Gastritis	11	..	1	..	..	..	1	..
Enteritis	3	..	2	..	2	2	..	..
Obstipatio	13	..	8	..	9	..	..	..
Dyspepsia	56	..	136	..	61	..	71	..
Colica	18	..	51	..	18	..	..	..
Hæmatemesis	..	..	1	..	..	..	..	..
Hæmorrhois	21	..	37	..	13	..	..	..
Hernia	2	..	8	..	1	..	..	..
Fistula in ano	1	..	7	..	7	..	..	..
Prolapsus ani	..	..	2	..	..	..	..	..

Appendix, No. V.—*continued.*

Stations	Gibraltar.		Malta.		Ionian Islands.		Native Troops. R. Malta Fencibles.	
Strength	5,153		5,310		3,660		610	
Diseases.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
Splenitis	..	..	..	..	1	..	..	..
Hepatitis Acuta	1	..	4	..	2	..	..	..
„ Chronica	1	..	8	1	3	..	1	..
Icterus	17	1	26	..	21	..	1	1
Ascites	..	..	4	..	1	..	..	..
Ranula	2	..	..	..	..	..	..	..
5. Of the Urinary System:								
Nephritis	1	..	2	1	..	..	..	..
Dysuria	1	..	1	..	3	..	3	..
Enuresis	6	..	1	..	3	..	..	..
Cystitis	2	..	1	..	..	..	..	..
Fistula in Perineo	..	..	1	..	..	..	..	..
6. Of the Reproductive System:								
Hydrocele	8	..	6	..	2	..	..	..
Sarcocele	1	..	..	..	..	..	..	..
7. Of the Locomotive System:								
Arthritis	9	..	3	..	1	..	..	..
Contractura	..	..	..	..	1	..	..	..
Ostitis	3	..	..	..	..	..	..	..
Periostitis	5	..	2	..	4	..	..	..
Necrosis	..	..	2	..	..	..	..	..
8. Of the Integumentary System:								
Acne	..	..	2	..	1	..	..	..
Ecthyma	..	..	1	..	..	..	..	..
Urticaria	3	..	3	..	5	..	..	..
Eczema	14	..	37	..	28	..	..	..
Herpes	26	..	7	..	6	..	..	..
Impetigo	10	..	36	..	27	..	..	..
Psoriasis	13	..	29	..	5	..	..	..
Lichen	1	..	9	..	4	..	..	..
Prurigo	6	..	1	..	6	..	..	..
Lepra	4	..	4	..	..	..	..	..
Phlegmon et Abscessus	486	..	637	..	328	..	36	..
Paronychia	27	..	13	..	5	..	..	..
Ulcus	247	..	276	..	151	..	23	..
IV. *Developmental Diseases.*								
4. Diseases of Nutrition:								
Atrophia	..	..	1	..	..	..	..	..
Debilitas	3	..	6	..	29	..	..	..
V. *Violent Deaths and Diseases.*								
1. Accidental:								
Ambustio	9	..	9	..	5	..	1	..
Insolatio	..	..	3	1	1	1	..	..
Submersio	..	..	..	2	..	1	..	..
Asphyxia	..	..	..	1	..	..	..	..
Fractura	16	1	31	1	6	1	1	..
Amputatio	..	..	1	..	1	..	..	..
Contusio	142	..	223	..	91	..	30	..
Compressio Cerebri	..	..	..	1	..	..	..	..
Vulnus Sclopetarium	1	..	1	..	..	..	..	..

Appendix No. V.—*continued.*

Stations	Gibraltar.		Malta.		Ionian Islands.		Native Troops. R. Malta Fencibles.	
Strength	5,153		5,310		3,660		610	
Diseases.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
Vulnus Incisum	112	..	80	..	81	..	9	..
Luxatura	..	..	4	..	3	..	..	..
Subluxatio	75	..	74	..	38	..	2	..
Venenatio	..	..	1	1	..	..	..	..
2. In Battle:								
3. Homicidal:								
4. Suicidal:								
Vulnus Sclopetarium	..	4	..	..	..	..	..	..
„ Incisum	..	1	..	..	..	..	..	..
5. Execution:								
Suspendium	..	1	..	..	..	..	..	..
6. Punitus	23	..	20	..	13	..	..	..
Diseases not stated.								
Returned as—								
Morbi alii	16	..	..	..	..	..	..	..
Observatio	57	..	61	..	16	..	2	..
General Total	4,889	37	6,446	96	3,225	43	378	5

APPENDIX No. VI.

ABSTRACT, showing the Ages of the Troops serving in the Mediterranean Commands, and the Deaths at each Age during the Year 1859.

		Under 20 Years.		20—24.		25—29.		30—34.		35—40.		40 and upwards.		Total.	
		Strength.	Died.	Strength.	Died.	Strength.	Died.	Strength.	Died.	Strength.	Died.	Strength.	Died.	Strength.	Died.
Gibraltar.. ..	2nd Battalion 6th Regiment ..	303	2	371	1	130	4	28	..	10	..	4	..	846	7
	2nd „ 8th „	401	1	255	3	72	..	25	..	13	..	1	..	767	4
	1st „ 25th „	178	..	360	1	144	1	54	..	120	1	13	1	869	4
Malta	2nd „ 3rd „	391	..	362	10	71	1	27	1	8	..	2	..	861	12
	2nd „ 15th „	207	7	248	2	129	5	35	..	22	..	1	..	642	14
	1st „ 21st „	37	..	468	2	189	2	93	4	45	1	8	..	840	9
	2nd „ 23rd „	331	4	360	11	152	3	22	1	9	..	1	1	875	20
	4th „ Rifle Brigade	236	2	389	9	131	6	11	1	10	1	2	..	779	19
Ionian Islands ..	2nd „ 2nd Regiment.. ..	71	4	685	3	89	1	17	1	10	..	4	..	876	9
Total		2,155	20	3,498	42	1,107	23	312	8	247	3	36	2	7,355	98

The returns of the 2nd Battalion 7th Regiment, at Gibraltar, and the 2nd Battalions 4th and 9th, and 1st Battalion 14th Regiment, in the Ionian Islands, were not available.

APPENDIX No. VII.

Abstract, showing the Admissions into Hospital and Deaths among the Troops serving in British America in the year 1859.

Stations	Bermuda.		Nova Scotia.		Canada.		New-foundland		British Columbia.	
Strength	1,074		1,798		2,782		209		150	
Diseases.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
I. *Zymotic Diseases.*										
1. Miasmatic Diseases:										
Variola	..	..	1	..	1	..	..	..	..	..
Tonsillitis	4	..	31	..	30	..	12	..	5	..
Influenza	..	..	..	..	2	..	18	..	..	..
Dysenteria Acuta	7	..	..	..	2	..	..	..	..	..
„ Chronica	..	..	2	..	1	..	..	..	..	..
Diarrhœa	47	..	34	..	71	..	10	..	8	..
Cholera Biliosa	..	..	..	..	4	..	..	..	..	..
Febris Intermittens	2	..	1	..	..	..	..	..	..	..
„ Remittens	..	..	..	..	15	..	..	..	..	..
„ Continua	11	2	11	..	64	4	7	..	..	..
Erysipelas	..	..	1	..	6	1	2	..	..	..
Ophthalmia	32	..	20	..	98	..	7	..	1	..
Rheumatismus Acutus	12	..	27	..	27	1	5	..	..	..
„ Chronica	6	..	9	..	48	..	30	..	3	..
Vaccinia	..	..	..	..	1	..	..	..	..	..
2. Enthetic Diseases:										
Syphilis Primaria	9	..	68	..	78	..	..	..	6	..
„ Secundaria	4	..	23	..	18	..	1	..	..	..
Ulcus Penis	4	..	5	..	38	..	..	..	..	..
Iritis Syphilitica	5	..	1	..	3	..	..	..	..	..
Gonorrhœa	25	..	67	..	82	..	..	..	2	..
Phymosis, &c.	1	..	2	..	2	..	..	..	..	..
Orchitis (Gonorrhœal)	6	..	14	..	11	..	..	..	1	..
Strictura Urethræ	2	..	10	..	9	..	6	..	..	..
Bubo	12	..	10	..	38	..	..	..	3	..
Verrucæ	1	..	2	..	5	..	..	..	..	..
3. Dietic Diseases:										
Scorbutus	..	..	..	..	1	..	..	..	..	..
Ebriositas	..	..	..	1	30	..	1	..	..	..
4. Parasitic Diseases:										
Porrigo	..	..	1	..	1	..	1	..	..	..
Scabies	5	..	5	..	1	..	..	..	..	..
Vermes	1	..	..	..	2	..	..	..	..	..
Tinea Capitis	..	..	1	..	..	..	..	..	..	..
II. *Constitutional Diseases.*										
1. Diathetic Diseases:										
Lumbago	3	..	1	..	10	..	2	..	..	..
Anasarca	..	..	4	..	1	..	..	..	..	..
Tumores	..	..	1	..	..	..	2	..	..	..
Œdema	..	..	..	..	2	..	..	..	..	..

Appendix No. VII.—*continued.*

Stations	Bermuda.		Nova Scotia.		Canada.		New-foundland		British Columbia.	
Strength	1,074		1,798		2,782		209		150	
Diseases.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
2. Tubercular Diseases:										
Scrofula	..	..	7	..	..	..	..	..	..	..
Phthisis Pulmonalis	4	3	21	5	21	5	5	..	..	..
Hæmoptysis	2	..	3	..	3	..	..	..	..	..
III. *Local Diseases.*										
1. Of the Nervous System:										
Meningitis	..	..	..	..	2	..	..	..	..	..
Encephalitis	..	..	..	..	1	1	..	..	..	..
Cephalæa	..	..	6	..	2	..	5	..	..	..
Paralysis	1	..	..	..	4	1	..	..	..	..
Delirium Tremens	9	2	11	..	32	2	2	1	1	..
Mania	..	..	..	..	..	..	1	..	..	..
Dementia	3	..	..	..	2	..	..	..	..	..
Epilepsia	5	..	3	..	4	..	5	..	..	..
Tetanus	1	1	..	..	1	..	..	..	..	..
Neuralgia	2	..	..	..	2	..	..	..	..	..
Odontalgia	..	..	..	..	1	..	..	..	..	..
Dysecœa	1	..	..	..	1	..	..	..	..	..
Otitis	3	..	4	..	1	..	..	..	..	..
Amaurosis	..	..	2	..	2	..	1	..	1	..
Cataractes	..	..	..	..	1	..	..	..	..	.
2. Of the Circulatory System:										
Pericarditis	..	..	..	..	3	..	..	..	..	..
Morbus Cordis	3	..	1	..	5	1	10	..	..	..
Palpitatio	1	..	4	..	..	..	..	..	..	..
Aneurisma	..	..	1	1	3	..	..	..	..	..
Varix	..	..	..	..	1	..	7	..	..	..
3. Of the Respiratory System:										
Bronchitis Acuta	39	..	110	..	135	2	26	..	7	..
,, Chronica	10	..	24	..	24	2	29	..	7	..
Pleuritis	4	..	3	..	6	..	1	..	..	..
Pneumonia	1	..	18	2	22	3	2	..	..	..
Asthma	1	..	3	..	1	..	1	..	..	..
Epistaxis	1	..	..	..	..	..	..	..	..	..
Pleurodynia	1	..	..	..	1	..	..	..	..	..
4. Of the Digestive System:										
Peritonitis	..	..	1	1	..	..	..	..	..	..
Enteritis	2	1	..	..	..	..	..	..	..	..
Obstipatio	5	..	8	..	4	..	2	..	..	..
Dyspepsia	53	..	39	..	54	..	5	..	1	..
Colica	1	..	4	..	10	..	..	..	..	..
Hæmatemesis	..	..	1	..	..	..	..	..	..	..
Hæmorrhois	12	..	10	..	7	..	..	..	..	..
Hernia Inguinalis	..	..	2	..	1	..	2	..	..	..
Fistula in Ano	..	..	1	..	3	..	..	..	..	..
Splenitis	..	..	..	..	1	..	..	..	..	..
Hepatitis Acuta	1	..	..	..	6	..	1	..	..	..
,, Chronica	2	..	1	..	4	1	5	..	..	..
Icterus	..	..	4	..	2	..	..	..	..	..

Appendix No. VII.—*continued.*

Stations	Bermuda.		Nova Scotia.		Canada.		Newfoundland		British Columbia	
Strength	1,074		1,798		2,782		209		150	
Diseases.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
5. Of the Urinary System :										
Nephritis	..	..	2	..	3	..	..	..	..	..
Nephria	..	..	..	..	2	..	..	..	..	..
Cystitis	..	..	1	..	1	..	..	..	..	..
Enuresis	1	..	..	..	..	..	..	..	..	..
6. Of the Reproductive System :										
Hydrocele	1	..	..	..	1	..	..	..	..	..
Sarcocele	1	..	..	..	..	..	..	..	..	..
7. Of the Locomotive System :										
Arthritis	1	..	1	..	4	..	1	..	..	..
Hydrarthrus	1	..	1	..	1	..	..	..	..	..
Contractura	2	..	..	..	..	..	..	..	..	..
Periostitis	1	..	..	..	2	..	1	..	..	..
Caries	..	..	1	..	..	..	..	..	..	..
8 Of the Integumentary System :										
Epulis	..	..	..	..	2	..	..	..	..	..
Urticaria	..	..	1	..	..	..	1	..	..	..
Eczema	..	..	1	..	1	..	..	..	..	..
Herpes	1	..	3	..	3	..	2	..	..	..
Impetigo	..	..	1	..	..	..	1	..	..	..
Psoriasis	1	..	2	..	11	..	..	..	..	..
Lichen	1	..	1	..	..	..	..	..	..	..
Rupia	1	..	..	..	..	..	..	..	..	..
Lepra	..	..	3	..	1	..	..	..	..	..
Phlegmon	81	..	78	..	104	..	8	..	15	..
Paronychia	..	..	4	..	2	..	1	..	..	..
Ulcus	39	..	49	..	70	..	3	..	6	..
IV. *Developmental Diseases.*										
4. Diseases of Nutrition :										
Atrophia	..	..	1	..	..	..	..	..	..	..
Debilitas	1	..	..	..	3	..	..	..	..	..
V. *Violent Deaths or Diseases.*										
1. Accidental :										
Ambustio	1	..	5	..	7	..	1	..	1	..
Gelatio	..	..	10	..	23	..	1	..	..	..
Insolatio	..	..	..	..	1	..	..	..	..	..
Submersio	..	..	..	..	1	1	..	..	..	1
Asphyxia	..	..	..	..	..	1	..	..	..	..
Fractura	6	1	10	..	12	..	1	..	4	..
Amputatio	..	..	..	..	1	..	1	..	..	..
Contusio	29	..	81	..	87	..	17	..	7	..
Vulnus Sclopetarium	..	..	..	..	..	..	..	..	1	..
„ Incisum	22	..	51	1	52	..	6	..	5	..
Luxatura	2	..	2	..	5	..	2	..	..	..
Subluxatio	12	..	27	..	32	..	10	..	..	..
4. Suicidal : Vulnus Sclopetarium ..	..	2	..	..	..	1	..	..	..	..
6. Punitus	1	..	2	..	3	..	3	..	..	..
Diseases not stated :										
Returned as Observatio	4	..	21	..	6	..	4	..	..	..
Total	577	12	1003	11	1516	27	278	1	85	1

APPENDIX No. VIII.

Abstract, showing the Ages of the Troops serving in British America, and the Deaths at each Age during the year 1859.

Station.	Corps.	Under 20.		20—24.		25—29.		30—34.		35—39.		40 and upwards.		Total.	
		Strength.	Died.	Strength.	Died.	Strength.	Died.	Strength.	Died.	Stren gth	Died.	Strength.	Died.	Strength.	Died.
Bermuda.. ..	26th Foot	14	..	300	3	187	1	207	5	104	5	36	..	848	14
Nova Scotia and New Brunswick	62nd " ..	35	1	388	..	203	..	75	3	30	..	9	..	740	4
	63rd " ..	63	..	402	4	214	1	91	3	23	..	5	..	798	8
Canada ..	1st Batt. 17th Foot	31	1	403	5	220	2	91	..	30	1	10	..	785	9
	39th Foot	71	..	373	2	250	3	108	..	27	1	5	..	834	6
	Canadian Rifles ..	11	..	7	..	50	1	254	2	467	6	274	3	1,063	12
Newfoundland	Royal Newfoundland Companies	..	..	8	..	19	..	38	..	74	1	50	..	189	1

APPENDIX No. IX.

ABSTRACT, showing the Admissions into Hospital and Deaths among the Whit Troops serving in Jamaica, and the Windward and Leeward Command.

			Subordinate Stations.				Subordinate Stations.							
Stations	Jamaica.		Port Royal.	New-castle.	West Indies.		Barbadoes.		St. Lucia.		Trinidad.		British Guiana	
Strength	624		124	481	1215		786		96		190		143	
Diseases.	Admitted.	Died.	Admitted.	Admitted.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
I. *Zymotic Diseases.*														
1. Miasmatic:														
Variola	..	..	..	..	1	..	..	..	..	..	..	..	1	..
Tonsillitis	8	..	..	8	14	..	11	..	..	..	3	..	..	..
Dysenteria Acuta.	..	..	..	..	5	..	1	..	..	..	3	..	1	..
Diarrhœa	26	..	1	24	26	..	13	..	6	..	4	..	3	..
Febris Intermittens	72	..	52	9	125	..	51	..	11	..	49	..	14	..
„ Remittens	10	2	3	5	97	1	..	..	..	..	30	1	67	..
„ Icterodes..	..	1	..	..	11	10	..	..	..	..	11	10	..	..
„ Continua..	14	..	10	4	145	1	67	..	22	..	56	1	..	..
Erysipelas	..	..	..	..	1	..	1	..	..	..	..	..	..	..
Furunculus	..	..	..	..	1	..	1	..	..	..	..	..	..	..
Ophthalmia.. ..	129	..	10	117	142	..	100	..	18	..	19	..	5	..
Rheum: Acutus ..	3	..	2	1	34	..	29	..	1	..	2	..	2	..
„ Chron: ..	7	..	..	7	9	..	9	..	..	..	..	..	..	..
Vaccinia	..	..	..	..	2	..	2	..	..	..	..	..	..	..
2. Enthetic:														
Syphilis Primaria	47	..	3	44	23	..	21	..	..	..	1	..	1	..
„ Secundaria	30	..	8	22	10	..	7	..	1	..	1	..	1	..
Ulcus Penis.. ..	2	..	2	..	7	..	7	..	..	..	..	..	..	..
Iritis Syphilitica..	..	..	..	..	2	..	1	..	..	..	1	..	..	..
Gonorrhœa	39	..	14	24	55	..	42	..	..	..	7	..	6	..
Phymosis, &c. ..	1	..	1	..	4	..	4	..	..	..	..	..	..	..
Orchitis (Gonorr.)	6	..	2	4	22	..	19	..	1	..	2	..	..	..
Strictura Urethræ	2	..	..	2	..	..	..	..	..	..	..	..	..	..
Bubo	6	..	1	5	18	..	13	..	..	..	4	..	1	..
Verrucæ	..	..	..	..	3	..	3	..	..	..	..	..	..	..
3. Dietic:														
Ebriositas	..	..	..	..	..	1	..	1	..	..	..	..	..	..
4. Parasitic:														
Vermes	..	..	..	..	4	..	3	..	1	..	..	..	..	..
II. *Constitutional Diseases.*														
1. Diathetic:														
Lumbago	..	..	..	..	4	..	3	..	..	..	1	..	..	..
Anasarca	1	..	..	..	1	..	..	..	1	..	..	..	..	..
2. Tubercular:														
Scrofula	..	..	..	..	6	..	6	..	..	..	..	..	..	..
Phthisis Pulmon.	..	..	..	..	1	1	1	1	..	..	..	..	..	..
Hæmoptysis ..	..	..	..	..	2	..	2	..	..	..	..	..	..	..

Appendix IX.—*continued.*

			Subordinate Stations.				Subordinate Stations.							
Stations	Jamaica.		Port Royal.	New-castle.	West Indies.		Barba-does.		St. Lucia.		Trinidad.		British Guiana.	
Strength	624		124	481	1215		786		96		190		143	
Diseases.	Admitted.	Died.	Admitted.	Admitted.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
III. *Local Diseases.*														
1. Nervous System:														
Cephal: et Vertigo	1	..	..	..	2	..	1	..	1	..	..	..	..	..
Apoplexia	..	1	..	..	1	1	..	..	..	..	..	..	1	1
Delirium Tremens	10	2	4	2	21	4	9	..	..	..	12	4	..	..
Mania	..	..	..	..	1	..	1	..	..	..	..	..	..	..
Dementia	1	..	1	..	1	..	1	..	..	..	..	..	..	..
Epilepsia	2	..	1	1	9	..	5	..	2	..	..	..	2	..
Otitis	..	..	..	..	13	..	13	..	..	..	..	..	..	..
Aphonia	..	..	..	..	5	..	4	..	..	..	1	..	..	..
2. Circulatory System:														
Aneurisma	1	..	1	..	1	1	1	1	..	..	..	..	..	..
Morbus Cordis ..	1	..	..	1	..	1	..	1	..	..	..	..	..	..
3. Respiratory System:														
Bronchitis Acuta	29	..	4	25	29	..	23	..	2	..	2	..	2	..
" Chronica	2	..	..	..	6	..	4	..	2	..	..	..	..	..
Pleuritis	..	..	..	..	12	1	10	1	..	..	..	..	2	..
Pneumonia	1	..	1	..	2	..	1	..	1	..	..	..	..	..
Asthma	..	..	..	..	1	..	1	..	..	..	..	..	..	..
4. Digestive System:														
Gastritis	..	..	..	..	1	..	..	..	1	..	..	..	..	..
Obstipatio	1	..	..	..	7	..	4	..	1	..	1	..	1	..
Dyspepsia	121	..	2	119	51	..	29	..	2	..	17	..	3	..
Colica	23	..	9	12	27	..	13	..	5	..	7	..	2	..
Hæmatemesis ..	..	..	..	..	1	..	1	..	..	..	..	..	..	..
Hæmorrhois ..	7	..	1	6	3	..	..	..	..	..	1	..	2	..
Hernia Inguinalis	2	..	..	2	4	..	1	..	..	..	..	..	3	..
Hepatitis Acuta ..	..	..	..	..	1	..	1	..	..	..	..	..	..	..
" Chronica	4	1	..	4	..	..	..	..	..	..	..	..	..	..
Icterus	2	..	..	2	..	..	..	..	..	..	..	..	..	..
Ascites	..	..	..	..	2	..	1	..	1	..	..	..	..	..
5. Urinary System:														
Dysuria	..	..	..	..	2	..	2	..	..	..	..	..	..	..
6. Reproductive System:														
Hydrocele	1	..	..	1	2	..	2	..	..	..	..	..	..	..
7. Locomotive System:														
Periostitis	..	..	..	..	3	..	3	..	..	..	..	..	..	..

Appendix IX.—*continued.*

			Subordinate Stations.				Subordinate Stations.							
Stations	Jamaica.		Port Royal.	New-castle.	West Indies.		Barba-does.		St. Lucia.		Trinidad.		British Guiana	
Strength	624		124	481	1215		786		96		190		143	
Diseases.	Admitted.	Died.	Admitted.	Admitted.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
8. Integumentary System:														
Urticaria	2	..	2	..	1	..	1	..	..	..	..	..	..	..
Eczema	1	..	1	..	2	..	2	..	..	..	..	..	..	..
Herpes	1	..	..	1	4	..	3	..	..	..	1	..	..	..
Impetigo	..	..	..	..	2	..	..	..	1	..	..	..	1	..
Psoriasis	..	..	..	..	4	..	3	..	1	..	..	..	..	..
Lepra	..	..	..	..	1	..	..	..	..	..	1	..	..	..
Phlegmon et Absc.	64	..	29	34	153	..	116	..	7	..	17	..	13	..
Paronychia	...	..	..	..	18	..	10	..	..	..	3	..	..	..
Ulcus	59	..	10	49	58	..	41	..	12	..	3	..	2	..
IV. *Developmental Diseases.*														
4. Diseases of Nutrition:														
Debilitas	3	..	..	3	6	..	6	..	..	..	..	..	..	..
V. *Violent Deaths or Diseases.*														
1. Accidental:														
Ambustio	4	..	1	2	7	..	3	..	..	..	2	..	2	..
Insolatio	1	..	..	..	..	..	..	..	..	..	..	..	..	..
Submersio	..	..	..	..	..	1	..	..	..	..	..	..	..	1
Fractura	2	..	..	1	3	..	2	..	..	..	..	..	1	..
Contusio	56	..	23	33	38	..	27	..	4	..	4	..	3	..
Vulnus Sclopet: ..	1	..	..	1	1	..	1	..	..	..	..	..	..	..
,, Incisum ..	15	..	5	10	37	..	18	..	4	..	6	..	9	..
Luxatura	1	..	1	..	7	..	4	..	..	..	1	..	2	..
Subluxatio	2	..	..	2	26	..	19	..	3	..	1	..	3	..
3. Homicidal:														
Vulnus Incisum ..	..	1	..	..	..	..	..	..	..	..	..	..	..	..
4. Suicidal:														
Vulnus Sclopet: ..	1	1	..	1	1	1	..	..	..	..	1	1	..	..
6. Punitus .	6	..	..	3	3	..	3	..	..	..	..	..	..	..
Diseases not stated, returned as "Observatio."	2	..	1	1	21	..	19	..	1	..	1	..	..	..
Total ..	833	9	206	595	1371	24	826	5	113	..	276	17	156	2

APPENDIX No. X.

showing the Admissions into Hospital and Deaths among the Black Troops
Jamaica, the Windward and Leeward Commands, Honduras, and Bahamas.

					Subordinate Stations.											
. ..	Jamaica.		West Indies.		Barbadoes.		St. Lucia.		Trinidad.		British Guiana.		Honduras.		Bahamas.	
. ..	807		1260		754		103		102		301		322		322	
ı.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
seases.																
tic:																
. ..	..	..	3	..	1	..	..	..	..	..	2	..	..	..	..	..
. ..	12	..	15	..	14	..	1	..	..	..	..	..	2	..	5	..
cuta	3	..	2	..	1	..	..	..	..	..	1	..	2	..	7	3
onica	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..
. ..	21	1	17	2	9	2	1	..	4	..	3	..	8	..	17	..
ittens	325	1	125	1	22	1	5	..	10	..	88	..	64	..	41	..
tens..	62	4	23	2	8	..	..	..	7	2	8	..	2	..	1	..
s ..	..	..	1	1	1	1	..	..	..	..	..	..	..	..	..	..
ides	7	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..
ua ..	5	1	42	2	33	1	9	1	..	..	..	..	3	..	3	..
. ..	20	..	31	..	19	..	..	..	1	..	11	..	2	..	4	..
tus ..	13	..	87	..	62	..	1	..	2	..	22	..	5	..	16	..
n: ..	36	..	31	..	15	..	5	..	4	..	7	..	5	..	28	..
. ..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..
tic:																
naria	98	..	79	..	65	..	..	..	..	..	14	..	3	..	22	..
ıdaria	17	1	13	..	9	..	1	..	..	..	3	..	2	..	4	..
. ..	7	..	2	..	..	..	2	..	..	..	..	..	..	..	..	..
. ..	114	..	93	..	77	..	2	..	1	..	13	..	23	..	14	..
c. ..	..	..	2	..	2	..	..	..	..	..	..	..	6	..	..	..
norr:)	14	..	25	..	16	..	..	..	2	..	7	..	2	..	2	..
thræ	2	1	4	..	3	..	..	..	1	..	..	..	..	..	2	..
. ..	14	..	23	..	13	..	1	..	3	..	6	..	3	..	5	..
. ..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..
c:																
. ..	..	..	..	..	..	..	..	..	..	..	..	..	1	2	1	..
ti:																
. ..		..	..	..	.	..	..	..	..	..	..	..	..	..	..	..
bri: ..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..
. ..	..	..	..	..	..	..	..	..	..	..	..	..	6	..	..	..
tional																
ı.																
tic:																
. ..	2	..	13	..	1	..	2	..	1	..	9	..	..	..	..	..
. ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1
. ..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..
. ..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..
ılar:																
. ..	2	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..
oanus	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..

Appendix No. X.—*continued.*

Stations	Jamaica.		West Indies.		Subordinate Stations.								Honduras.		Bahamas.	
					Barbadoes.		St. Lucia.		Trinidad.		British Guiana.					
Strength	807		1260		754		103		102		301		322		322	
Diseases.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
Phthisis Pulmon:	12	6	8	2	6	1	..	..	1	1	1	..	..	..	5	5
Hæmoptysis ..	4	..	1	1	..	1	..	..	..	..	1	..	..	..	..	..
III. *Local Diseases.*																
1. Nervous System:																
Encephalitis ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1
Cephalæa	8	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..
Apoplexia	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	1
Paralysis	3	1	2	..	..	..	..	..	..	..	2	..	1	..	1	..
Delirium Tremens	..	..	2	..	2	..	..	..	..	..	..	..	..	..	..	..
Mania	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Dementia	..	..	6	1	4	1	..	..	2	..	..	..	..	..	..	..
Epilepsia	6	..	4	..	3	..	1	..	..	..	..	..	..	..	..	..
Odontalgia	:	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..
Otitis	4	..	4	..	3	..	..	..	..	..	1	..	..	..	..	..
2. Circulatory Syst:																
Carditis	1	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..
Varix	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..
3. Respiratory Syst:																
Bronchitis Acuta	19	1	106	1	62	1	6	..	8	..	30	..	14	..	11	..
,, Chronica	14	..	14	1	2	..	5	..	1	..	6	1	..	..	2	..
Pleuritis	..	..	5	..	3	..	..	..	1	..	1	..	4	..	2	..
Pneumonia	2	1	5	1	2	1	1	..	..	..	2	..	1	..	3	1
Asthma	1	1	11	..	8	..	..	..	..	..	3	..	2	..	1	..
Pleurodynia ..	1	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..
4. Digestive System:																
Gastritis	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..
Obstipatio	3	..	14	..	3	..	2	..	2	..	7	..	2	..	4	..
Dyspepsia	2	..	15	..	7	..	..	..	3	..	5	..	1	..	..	..
Colica	16	..	8	..	6	..	2	..	..	..	..	..	7	..	..	..
Hæmorrhois ..	1	..	3	..	3	..	..	..	..	..	..	..	..	..	..	..
Hernia Inguinalis	..	..	5	..	4	..	1	..	..	..	..	..	1	..	1	..
Fistula in ano ..	1	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..
Splenitis	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..
Hepatitis Acuta ..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Icterus	..	..	9	..	5	..	..	..	..	..	4	..	1	..	..	..
Ascites	..	..	2	2	1	1	..	..	1	1	..	..	..	..	..	..
5. Urinary System:																
Diuresis	..	..	1	1	..	..	..	..	..	..	1	1	2	..	..	..
Fistula in Perineo	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..
Albuminuria ..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
6. Locomotive System:																
Synovitis	..	..	2	..	..	..	..	..	2	..	..	..	..	..	1	..
Hydrarthrus ..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..
Periostitis	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..
Exostosis	..	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..
Caries	..	..		..	1	..	..	..	..	..	..	..	..	..	..	..
Necrosis	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

Appendix No. X.—*continued.*

					Subordinate Stations.											
ons	Jamaica.		West Indies.		Barbadoes.		St. Lucia.		Trinidad.		British Guiana.		Honduras.		Baham	
ıgth	807		1260		754		103		102		301		322		322	
ases.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Di
ntegumentary System :																
bi Cutis ..	1	..	3	..	..	..	..	..	1	..	2	..	1	..	..	.
ma	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	.
ɔes	..	..	2	..	2	..	..	..	..	..	..	..	1	..	..	.
ɜtigo	..	..	2	..	2	..	..	..	..	..	..	..	..	..	..	.
iasis	..	..	3	..	3	..	..	..	..	..	..	..	..	..	..	.
en..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	.
gmon et Absc.	41	..	114	..	78	..	14	..	..	..	22	..	17	..	18	.
nychia	1	..	6	..	..	..	2	..	..	..	4	..	5	..	..	.
s	40	..	116	..	81	..	10	..	6	..	19	..	21	..	8	.
Developmental Diseases.																
Diseases of Nutrition :																
litas	..	..	2	..	2	..	..	..	..	..	..	..	..	..	2	.
Violent Deaths r Diseases.																
Accidental :																
ustio	1	..	4	..	3	..	..	..	..	..	1	..	1	..	..	.
tura	2	..	4	..	3	..	..	..	..	..	1	..	2	..	..	.
utatio	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	.
usio	29	..	26	..	11	..	8	..	5	..	2	..	17	..	4	.
us Sclopet: ..	6	..	..	..	..	..	..	..	..	..	..	..	1	..	..	.
Incisum ..	11	..	58	..	33	..	5	..	1	..	19	..	22	..	19	.
ıtura	1	..	3	..	2	..	..	..	..	..	1	..	..	..	1	.
ıxatio	2	..	10	..	9	..	1	..	..	..	..	..	..	..	..	.
Homicidal :																
us Incisum ..	..	..	2	2	..	..	..	..	2	2	..	..	..	..	..	.
Suicidal :																
us Sclopet: ..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	
Punitus ..	9	..	10	..	6	..	2	..	..	..	2	..	6	..	2	..
stated, re-ned as Ob-vatio ..	7	..	38	..	29	..	3	..	5	..	1	..	2	..	2	..
Total ..	1034	25	1276	21	766	12	95	1	78	6	337	2	274	2	268	1

APPENDIX No. XI.

Abstract, showing the Admissions into Hospital and Deaths among the Troops serving on the West Coast of Africa.

Stations	Sierra Leone.		Gambia.		Gold Coast.	
Strength	356.		314.		279.	
Diseases.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
I. *Zymotic Diseases.*						
1. Miasmatic ;						
Variola	11	..	3	..	..	..
Varioloides	..	..	7	..	..	..
Varicella	1	..	..	..	..	..
Morbilli	6	..	..	..	..	..
Tonsillitis	2	..	1	..	..	..
Ophthalmia	4	..	3	..	6	..
Dysenteria Acuta	3	..	2	..	1	1
Diarrhœa	..	..	3	..	8	..
Febris Intermittens	13	..	18	..	2	..
„ Remittens	8	..	8	..	4	1
„ Continua	3	1	10	..	2	..
Rheumatismus Acutus ..	14	..	4	..	10	..
„ Chronicus ..	15	..	3	..	..	..
2. Enthetic :						
Syphilis Primaria	3	..	7	..	1	..
„ Secundaria	..	..	1	1	..	..
Bubo	5	..	2	..	..	..
Gonorrhœa	27	..	29	..	5	..
Phymosis, &c	..	..	1	..	..	..
Orchitis (Gonorrhœal) ..	2	..	3	..	3	..
Ulcus Penis	1	..	4	..	..	..
3. Parasitic :						
Vermes	2	..	..	..	..	..
Scabies	..	..	6	..	..	..
Dracunculus	..	..	2	..	70	..
II. *Constitutional Diseases.*						
1. Diathetic :						
Lumbago	1	..	..	..	..	..
Anasarca	..	..	2	..	..	..
2. Tubercular :						
Scrofula	5	..	..	..	..	..
Phthisis Pulmonalis ..	1	2	1	1	..	..
Hæmoptysis	..	..	1	..	..	..
III. *Local Diseases.*						
1. Of the Nervous System :						
Paralysis	..	..	1	..	2	..
Delirium Tremens	..	..	2	..	..	..
Epilepsia	..	..	2	..	..	..
Cephalæa	..	..	1	..	1	..
2. Of the Circulatory System:						
Aneurisma Aortæ	..	..	1	1	..	..

Appendix No. XI.—*continued.*

Stations	Sierra Leone.		Gambia.		Gold Coast.	
Strength	356.		314.		279.	
Diseases.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
3. Of the Respiratory System:						
Bronchitus Acuta	11	..	18	..	3	..
" Chronica ..	1	..	2	..	..	..
Pleuritis	..	..	4	1	1	..
Pneumonia	2	..	7	1	2	..
4. Of the Digestive System:						
Gastritis	..	..	..	..	1	1
Enteritis	1	1	..	..	..	..
Peritonitis	1	1	..	..	..	..
Obstipatio	1	..	..	..	2	..
Dyspepsia	1	..	..	..	1	..
Colica	3	..	2	..	..	..
Hæmatemesis	..	..	1	..	..	..
Hernia Inguinalis	1	..	..	..	1	..
Hæmorrhois	..	..	1	..	..	..
Splenitis	..	..	2	..	..	..
Hepatitis Acuta	1	..	..	..	1	..
" Chronica	..	..	..	..	1	1
Icterus	1	..	..	..	..	..
5. Of the Urinary System:						
Nephritis	1	..	..	..	..	..
Hæmaturia	1	..	..	..	1	..
Cystitis	..	..	..	..	1	..
6. Of the Reproductive System:						
Hydrocele	..	..	..	..	1	..
Sarcocele	..	..	1	..	..	..
7. Of the Locomotive System:						
Arthritis	1	..	1	..	..	..
Caries..	3	..	..	..	..	..
8. Of the Integumentary System:						
Morbi Cutis	3	..	..	..	..	..
Urticaria	..	..	2	..	..	..
Eczema	..	..	..	..	1	..
Frambœsia	..	..	..	..	1	..
Phlegmon et Abscessus ..	4	..	9	..	3	..
Paronychia	..	..	2	..	..	..
Ulcus	12	..	3	..	16	..
IV. *Developmental Diseases.*						
4. Diseases of Nutrition:						
Atrophia	..	..	2	..	..	..
Debilitas	1	..	..	..	..	..
V. *Violent Deaths or Diseases.*						
1. Accidental:						
Submersio	..	..	..	..	..	2
Fractura	1	..	..	..	..	..
Contusio	4	..	2	..	5	..

Appendix No. XI.—*continued.*

Stations	Sierra Leone.		Gambia.		Gold Coast.	
Strength	356.		314.		279.	
Diseases.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
Vulnus Sclopetarium ..	1	..	..	..	..	..
„ Incisum	6	..	6	..	2	..
Luxatura	..	..	1	..	..	..
Subluxatio	3	..	4	..	..	..
3. Homicidal:						
Vulnus Sclopetarium ..	..	..	1	1	..	..
4. Suicidal	..	..	..	1	..	1
5. Execution:						
Suspendium	..	..	..	1	..	..
6. Punitus..	..	..	1	..	..	..
Diseases not stated	1	..	5	..	3	..
Total	193	5	206	8	162	7

APPENDIX No. XII.

ABSTRACT, showing the Admissions into Hospital and Deaths among the Troops serving at St. Helena, the Cape of Good Hope, Mauritius, and Ceylon.

			Cape of Good Hope.								Ceylon.			
Stations	St. Helena.		Cape Town.		Natal.		Eastern Frontier.		Mauritius		White Troops.		Black Troops.	
Strength	465		664		562		3,096		1,254		913		1,564	
Diseases.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
I. *Zymotic Diseases.*														
1. Miasmatic:														
Variola	..	..	..	..	..	..	12	1	..	..	..	..	..	..
Varicella	..	..	1	..	..	..	..	..	..	..	..	..	..	..
Parotitis	1	..	4	..	..	..	1	..	..	..	..	..	7	..
Tonsillitis	6	..	20	..	11	..	56	..	17	..	16	..	7	..
Ophthalmia	3	..	28	..	78	..	273	..	30	..	47	..	92	..
Erysipelas	..	..	2	..	1	..	10	..	..	..	..	..	..	..
Dysenteria Acuta ..	1	..	37	3	7	1	29	1	80	1	75	7	28	1
„ Chronica ..	..	..	37	3	..	..	5	1	12	1	13	1	1	..
Diarrhœa	43	..	106	..	6	..	93	1	224	2	192	..	42	..
Cholera Biliosa ..	..	..	..	..	..	..	3	..	1	..	..	..	..	..
„ Spasmodica ..	..	..	..	..	..	..	..	..	..	..	6	1	2	2
Febris Intermittens ..	..	..	353	3	..	..	39	..	62	..	67	..	236	1
„ Remittens ..	..	..	17	..	..	..	2	..	..	..	7	1	26	..
„ Typhus ..	..	..	..	..	..	..	2	1	..	..	..	..	..	..
„ Continua ..	106	1	19	1	69	1	135	2	84	3	69	..	95	1
Rheumatismus Acutus	3	..	22	..	11	..	81	..	6	..	52	..	34	..
„ Chron.	14	..	32	..	20	..	60	..	48	..	26	1	14	..
2. Enthetic:														
Syphilis Primaria ..	2	..	64	..	3	..	121	..	15	..	61	..	3	..
„ Secundaria ..	11	..	25	..	13	..	43	..	17	..	22	..	4	..
Iritis Syphilitica ..	..	..	..	..	..	..	..	..	1	..	..	..	..	..
Bubo	4	..	12	..	11	..	20	..	9	..	51	..	10	..
Gonorrhœa	15	..	54	..	20	..	198	..	21	..	60	..	15	..
Phymosis, &c... ..	..	..	1	..	2	..	6	..	..	..	..	..	..	..
Orchitis (Gonorrhœal)	6	..	10	..	9	..	50	..	17	..	26	..	13	..
Strictura Urethræ ..	5	..	5	1	1	..	11	..	9	..	..	..	1	..
Ulcus Penis	..	..	8	..	4	..	32	..	2	..	1	..	11	..
Verrucæ	..	..	2	..	4	..	6	..	1	..	..	..	..	..
3. Dietic:														
Scorbutus	..	..	1	..	..	..	3	..	7	..	2	..	..	..
Ebriositas	..	..	1	..	..	..	..	1	..	..	3	..	1	..
4. Parasitic:														
Porrigo	..	..	..	..	..	..	..	..	..	..	4	..	..	..
Scabies..	1	..	5	..	2	..	121	..	1	..	..	..	79	..
Vermes	1	..	4	..	1	..	6	..	1	..	7	..	..	..
II. *Constitutional Diseases.*														
1. Diathetic:														
Podagra	..	..	..	..	..	..	1	..	..	..	..	..	..	..
Lumbago	3	..	4	..	..	..	11	..	11	..	7	..	11	..
Anasarca	..	..	1	..	..	..	..	..	..	..	..	..	4	2
Tumores	..	..	2	..	1	..	7	..	..	..	1	..	1	..

Appendix No. XII.—*continued.*

			Cape of Good Hope.								Ceylon.			
Stations	St. Helena.		Cape Town.		Natal.		Eastern Frontier.		Mauritius		White Troops.		Black Troops.	
Strength	465		664		562		3,096		1,254		913		1,564	
Diseases.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
2. Tubercular:														
Scrofula	..	..	3	..	1	..	1	..	2	..	5	..	1	..
Morbus Coxarius ..	..	..	..	..	..	..	2	..	..	..	..	..	..	..
Phthisis Pulmonalis ..	2	..	4	..	7	2	19	5	21	2	7	2	1	1
Hæmoptysis	1	..	1	..	2	..	2	..	7	..	5	..	2	1
III. *Local Diseases.*														
1. Nervous System:														
Encephalitis	..	..	..	..	..	..	..	..	1	..	1	..	..	..
Meningitis	..	..	..	..	..	..	1	..	..	..	..	..	..	..
Apoplexia	..	..	1	3	1	..	3	2	..	..	2	1	1	..
Paralysis	..	..	2	1	2	..	1	..	..	..	..	..	1	1
Delirium Tremens ..	2	..	14	3	10	..	29	1	5	..	20	1	..	..
Mania	..	..	1	..	..	..	2	..	..	..	..	..	..	..
Amentia	..	..	1	..	..	..	1	..	1	..	3	..	..	..
Epilepsia	..	..	..	..	..	..	4	1	11	..	5	..	1	..
Cephalæa et Vertigo ..	..	..	8	..	3	..	13	..	19	..	5	..	3	..
Tetanus	..	..	..	..	..	..	..	..	1	1	1	1	..	..
Neuralgia	..	..	..	..	..	..	5	..	1	..	..	..	3	..
Dysecœa	..	..	..	..	..	..	1	..	..	..	..	..	..	..
Otitis	2	..	4	..	3	..	7	..	10	..	17	..	..	..
Odontalgia	4	..	3	..	..	..	3	..	..	..	2	..	2	..
Hysteria	1	..	..	..	..	..	..	..	..	..	..	..	..	..
Amaurosis	..	..	..	..	..	..	..	..	1	..	..	..	..	..
2. Circulatory System:														
Carditis	..	..	..	..	..		1	..	..	..	3	..	..	..
Pericarditis	..	..	..	..	1	..	1	1	..	..	..	..	1	1
Aneurisma	..	..	1	..	1	..	3	1	..	..	2	..	1	..
„ Aortæ ..	1	1	..	..	..	..	..	..	..	..	..	..	..	..
Varix	4	..	3	..	1	..	5	..	1	..	..	..	..	..
Palpitatio	4	..	2	..	9	..	21	..	14	..	11	..	..	..
Morbus Cordis ..	..	..	2	..	..	..	64	4	8	..	1	..	..	..
3. Respiratory System:														
Laryngitis	..	..	..	..	..	..	1	..	..	..	..	..	..	..
Bronchitis Acuta ..	5	..	63	..	27	..	178	..	119	..	75	1	31	..
„ Chronica ..	8	..	3	..	11	..	27	1	40	..	15	..	3	..
Pleuritis	..	..	..	..	3	..	4	..	14	1	..	..	..	..
Pneumonia	..	..	3	2	1	..	14	..	20	..	3	..	2	1
Apoplexia Pulmonalis	..	..	..	..	..	..	..	..	1	1	..	..	..	..
Asthma et Dyspnœa ..	1	..	..	..	..	..	1	..	3	..	2	..	12	..
Epistaxis	..	..	..	..	..	..	2	..	1	..	..	..	..	..
Pleurodynia	..	..	1	..	1	..	5	..	..	..	..	..	..	..
4. Digestive System:														
Gastritis	..	..	..	..	..	..	3	..	..	..	7	..	1	..
Enteritis	..	..	..	..	..	..	..	..	..	..	2	1	..	..
Peritonitis	..	..	..	..	..	..	2	2	..	..	..	..	..	..
Obstipatio	1	..	2	..	1	..	7	..	21	..	13	..	4	..

Appendix No. XII,—*continued.*

			Cape of Good Hope.								Ceylon.			
Stations	St. Helena.		Cape Town.		Natal.		Eastern Frontier.		Mauritius		White Troops.		Black Troops.	
Strength	465		664		562		3,096		1,254		913		1,564	
Diseases.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
Local Diseases.														
Dyspepsia	4	..	4	..	14	..	61	..	22	..	39	..	2	..
Colica..	4	..	5	..	1	..	25	..	15	..	13	..	16	..
Hernia Inguinalis	..	..	3	..	1	..	2	..	..	..	..	..	2	..
Hæmorrhois	5	..	4	..	4	..	22	..	12	..	12	..	4	..
Fistula in ano..	1	..	..	..	..	..	6	..	..	..	2	..	..	..
Splenitis	..	..	2	..	..	..	..	..	6	..	4	..	2	..
Hepatitis Acuta	..	..	3	..	1	..	5	..	17	1	74	4	..	..
,, Chronica	..	..	9	..	5	..	6	1	30	..	44	4	..	..
Icterus..	..	..	3	..	1	..	7	..	2	..	3	..	..	..
Ascites..	..	..	2	..	3	1	2	..	..	..	..	..	..	..
Fistula Salivaria	..	..	..	..	..	..	1	..	..	..	..	..	..	..
Ileus	..	..	..	..	..	..	..	..	..	..	..	..	1	1
5. Urinary System:														
Nephritis	..	..	..	..	1	1	..	..	..	..	1	1	..	..
Ischuria	..	..	..	..	..	..	2	..	..	..	..	..	..	..
Hæmaturia	..	..	..	..	..	..	..	..	3	..	..	..	..	..
Dysuria	..	..	..	..	..	..	..	..	..	..	3	..	..	..
Fistula in Perineo	..	..	..	..	..	..	2	..	..	..	..	..	..	..
Diabetes	..	..	..	..	..	..	..	..	1	..	1	..	..	..
6. Reproductive System:														
Varicocele	..	..	..	..	..	..	..	..	4	..	..	..	..	..
Hydrocele	..	..	..	..	..	..	5	..	4	..	1	..	..	..
Orchitis (not Gonorrhl.)	..	..	6	..	..	..	14	..	..	..	..	..	..	..
Sarcocele	..	..	..	..	..	..	..	..	1	..	..	..	..	..
Spermatorrhœa	..	..	..	..	..	..	1	..	..	..	..	..	..	..
7. Locomotive System:														
Arthritis	1	..	..	..	..	..	3	..	..	..	..	..	..	..
Hydrarthrus	..	..	..	..	2	..	2	..	..	..	..	..	..	..
Contractura	..	..	..	..	..	..	3	..	..	..	2	..	..	..
Ostitis..	..	..	1	..	..	..	..	..	..	..	..	..	..	..
Periostitis	..	..	..	..	..	..	2	..	..	..	1	..	..	..
Exostosis	..	..	..	..	..	..	..	..	7	..	..	..	..	..
Necrosis	..	..	..	..	..	..	3	..	..	..	..	..	..	..
8. Integumentary System:														
Morbi Cutis	..	..	11	..	1	..	23	..	..	..	..	..	12	..
Eczema	15	..	..	..	..	..	..	..	..	..	2	..	..	..
Herpes..	2	..	..	..	..	..	..	..	8	..	3	..	..	..
Impetigo	3	..	..	..	..	..	..	..	..	..	1	..	..	..
Psoriasis	..	..	..	..	..	..	..	..	..	..	4	..	..	..
Lichen..	..	..	..	..	..	..	1	..	..	..	..	..	..	..
Lepra	..	..	1	..	..	..	..	..	..	..	..	..	..	..
Phlegmon et Abscessus	31	..	53	..	38	..	244	..	154	..	99	..	82	..
Paronychia	..	..	1	..	1	..	15	..	2	..	3	..	4	..
Ulcus	..	..	45	..	24	..	104	..	94	..	71	..	119	..

Appendix, No. XII.—*continued.*

			Cape of Good Hope.								Ceylon.			
Stations	St. Helena.		Cape Town.		Natal.		Eastern Frontier.		Mauritius		White Troops.		Black Troops.	
Strength	465		664		562		3,096		1,254		913		1,564	
Diseases.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
IV. *Developmental Diseases.*														
4. Diseases of Nutrition:														
Atrophia	..	..	..	..	..	..	..	..	..	..	..	..	2	1
Debilitas	..	..	11	..	..	..	6	..	..	..	3	..	..	..
V. *Violent Deaths or Diseases.*														
1. Accidental:														
Ambustio	..	..	..	..	..	..	6	..	2	..	1	..	..	..
Ictus fulminis	..	..	..	..	..	..	..	..	..	..	..	..	3	1
Submersio	..	..	..	..	..	..	..	3	..	..	..	1	..	..
Asphyxia	..	..	..	1	..	..	..	..	..	..	..	..	..	..
Fractura	1	..	5	..	3	..	15	1	11	..	2	..	1	1
Amputatio	..	..	..	..	..	..	1	..	..	..	..	..	..	..
Contusio	20	2	40	..	16	..	180	2	42	..	69	..	26	..
Vulnus Sclopetarium ..	..	..	1	..	2	..	4	..	..	..	..	..	1	..
„ Incisum ..	7	..	22	..	12	..	46	..	25	..	27	..	31	..
Luxatura	..	..	1	..	3	..	3	..	..	..	..	..	1	..
Subluxatio	9	..	22	..	11	..	44	..	20	..	22	..	10	..
4. Suicidal:														
Vulnus Sclopetarium ..	..	..	..	..	..	..	..	..	2	3	..	1	..	..
6. Punitus	..	..	2	..	2	..	20	..	17	..	6	..	..	..
Diseases not stated ..	9	..	30	..	8	1	102	2	41	..	11	..	7	..
Total ..	373	4	1286	21	513	7	2858	35	1540	16	1546	29	1133	16

APPENDIX No. XIII.

RETURN showing the Ages of the Troops serving at the Cape of Good Hope during the year 1859.

Corps.	Under 20.		20—24.		25—29.		30—34.		35—40.		40 and upwards.		Total.	
	Strength.	Deaths.	Strength.	Deaths.	Strength.	Deaths.	Strength.	Deaths.	Strength.	Deaths.	Strength.	Deaths.	Strength.	Deaths.
1 Battalion 2nd Foot ..	1	..	257	2	222	5	164	1	72	1	23	2	739	11
45th Foot	2	..	57	..	70	1	71	..	120	2	22	..	342	3
85th Foot	21	..	356	1	195	1	128	2	48	..	2	..	750	4
Cape Mounted Rifles ..	50	..	209	5	300	4	154	2	163	3	..	..	876	14
2nd Battalion 13th Foot	401	..	256	1	98	2	20	..	3	..	3	1	781	4
Total	475	..	1,135	9	885	13	537	5	406	6	50	3	3,488	36

The 2nd Battalion 13th Foot did not arrive at the Cape till the 1st of February, and the 45th left it on the 2nd of June; the necessary deductions have consequently been made from the strength of these regiments.

APPENDIX No. XIV.

Abstract, showing the Admissions into Hospital and Deaths among the Troops serving in the Australian Colonies, New Zealand, and China.

Stations	Australia.		Tasmania.		New Zealand.		China.			
							White.		Black.	
Strength	1,380		334		1,125		1,550		2,009	
Diseases.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
I. *Zymotic Diseases.*										
1. Miasmatic:										
Varicella	..	..	..	..	..	..	..	..	2	..
Morbilli	..	..	..	..	..	..	2	..	..	..
Parotitis	1	..	..	..	2	..	2	..	..	..
Tonsillitis	37	1	5	..	10	..	7	..	1	..
Ophthalmia	97	..	17	..	36	..	200	..	34	..
Erysipelas	1	..	1	..	4	..	1	1	9	1
Furunculus	..	..	..	..	1	..	12	..	..	..
Dysenteria Acuta	3	..	..	..	1	..	107	12	71	8
„ Chronica	..	..	..	..	..	..	16	1	11	1
Diarrhœa	32	..	..	..	30	1	320	11	278	29
Cholera Biliosa	..	..	1	..	..	..	..	..	..	..
„ Spasmodica	..	..	..	..	..	..	2	2	2	..
Febris Intermittens	..	..	..	..	..	..	1,118	5	1,401	24
„ Remittens	..	..	..	..	..	..	470	7	387	16
„ Typhus	1	1	..	..	..	..	1	1	1	1
„ Continua	19	1	2	..	3	1	369	7	43	6
Anthrax	..	..	..	..	2	..	..	..	..	..
Rheumatismus Acutus	28	..	1	..	12	..	69	..	55	1
„ Chronica	19	..	..	..	32	..	44	..	90	..
2. Enthetic:										
Syphilis Primaria	30	..	..	..	4	..	208	..	66	..
„ Secundaria	9	..	..	..	11	..	41	..	12	..
Iritis Syphilitica	..	..	..	..	..	..	..	..	1	..
Bubo	15	..	4	..	1	..	65	..	7	..
Gonorrhœa	80	..	24	..	23	..	153	..	42	..
Phymosis, &c.	2	..	1	..	2	..	6	..	..	..
Orchitis (Gonorrhœal)	15	..	..	..	10	..	39	..	21	..
Strictura Urethræ	5	..	..	..	1	..	3	..	..	..
Ulcus Penis	6	..	..	..	..	..	20	..	..	..
Verrucæ	3	..	..	..	..	..	3	..	..	..
Lepra Syphilitica	..	..	..	..	..	..	..	..	1	..
3. Dietic:										
Scorbutus	1	..	..	..	2	..	..	..	10	..
Purpura	..	..	..	..	..	..	2	..	..	..
4. Parasitic:										
Porrigo	..	..	..	..	2	..	..	..	..	..
Scabies	..	..	..	..	..	..	2	..	19	..
Vermes	..	..	..	..	..	..	9	..	..	..

Appendix No. XIV.—*continued.*

Stations	Australia.		Tasmania.		New Zealand.		China.			
							White.		Black.	
Strength	1,380		334		1,125		1,550		2,009	
Diseases.	Admitted.	Died	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
II. *Constitutional Diseases.*										
1. Diathetic:										
Tumores	..	..	..	..	..	..	..	..	2	..
Lumbago	15	..	..	..	14	..	11	..	3	..
Anæmia	..	..	..	..	..	..	3	..	6	..
Beriberi	..	..	..	..	..	..	..	..	1	1
Anasarca	5	1	..	..	..	..	5	..	6	1
Œdema	..	..	..	..	..	..	..	..	1	..
Glaucoma	..	..	..	..	..	..	..	..	1	..
2. Tubercular:										
Scrofula	1	..	..	..	..	..	3	..	..	..
Phthisis Pulmonalis	18	4	3	2	7	..	9	1	1	1
Hæmoptysis	3	..	..	..	1	..	3	..	7	..
III. *Local Diseases.*										
1. Nervous System:										
Nyctalopia	..	..	..	..	..	..	..	..	4	..
Apoplexia	1	1	..	..	..	..	1	1	2	2
Paralysis	3	1	..	..	2	..	1	..	2	..
Delirium Tremens	5	..	..	..	7	..	31	2	..	..
Mania	..	..	..	..	..	..	..	..	2	..
Amentia	2	..	1	..	1	..	1	..	..	..
Epilepsia	5	..	..	..	2	..	4	..	5	1
Hysteria	..	..	..	..	..	..	1	..	1	..
Cephalæa	1	..	..	..	9	..	28	..	2	..
Neuralgia	1	..	..	..	6	..	3	..	..	..
Otitis	1	..	..	..	6	..	5	..	4	..
Surditas	11	..	..	..	1	..	..	..	1	..
Aphonia	1	..	..	..	2	..	..	..	..	..
Cataractes	..	..	..	..	3	..	..	..	1	..
Amaurosis	..	..	..	..	..	..	1	..	5	..
2. Circulatory System:										
Carditis	1	..	1	..	..	..	..	..	1	..
Pericarditis	..	..	..	..	..	..	1	..	1	..
Morbus Cordis	7	..	2	1	8	..	14	1	2	..
Palpitatio	3	..	..	..	..	..	8	..	..	..
Aneurisma	1	1	..	..	1	1	..	..	..	..
Varix	2	..	..	..	3	..	4	..	..	..
3. Respiratory System:										
Laryngitis	..	..	..	..	1	..	..	..	2	..
Bronchitis Acuta	63	..	13	1	113	..	118	3	88	2
„ Chronica	26	..	1	..	19	..	20	..	1	..
Pleuritis	3	..	1	..	..	..	..	..	4	..
Pneumonia	2	..	3	..	..	..	12	2	20	2
Asthma	3	..	..	..	1	..	5	..	35	..
Pleurodynia	..	..	..	..	1	..	1	..	..	..
Emphysema	..	..	..	..	..	..	2	..	..	..
Epistaxis	..	..	..	..	..	..	2	..	..	..

Appendix No. XIV.—*continued.*

Stations	Australia.		Tasmania.		New Zealand.		China.			
							White.		Black.	
Strength	1,380		334		1,125		1,550		2,009	
Diseases.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
4. Digestive System:										
Gastritis	..	..	..	..	3	..	3	..	1	..
Enteritis	..	..	..	..	2	1	2	..	1	..
Peritonitis	..	..	..	..	..	..	2	1	..	..
Obstipatio	16	..	1	..	5	..	11	..	1	..
Dyspepsia	12	1	..	..	13	..	65	..	13	..
Colica	14	..	8	..	22	..	37	..	28	..
Hæmatemesis	2	..	..	..	..	..	3	..	..	..
Hernia Inguinalis	1	..	..	..	1	..	3	..	2	..
Hæmorrhois	7	..	1	..	9	..	22	..	7	..
Fistula in Ano	2	..	..	..	1	..	6	..	4	..
Prolapsus Ani	1	..	..	..	..	..	1	..	..	..
Splenitis	..	..	..	..	..	..	22	1	23	2
Hepatitis Acuta	9	..	1	1	1	..	28	1	9	1
„ Chronica	4	..	1	..	..	..	17	1	2	..
Icterus	1	..	..	..	2	..	8	..	5	..
Ascites	..	..	..	..	..	..	1	..	2	..
5. Urinary System:										
Nephritis	5	..	..	..	1	..	..	..	1	..
Ischuria	..	..	1	..	..	..	..	..	1	..
Dysuria	..	..	..	..	1	..	2	..	..	..
Hæmaturia	..	..	..	..	..	..	..	..	1	..
Lithiasis	..	..	..	..	1	..	..	..	..	..
Cystitis	1	..	..	..	..	..	1	..	1	..
Fistula in Perineo	..	..	..	..	..	..	4	..	..	..
Diabetes	..	..	..	..	..	..	..	..	1	..
6. Reproductive System:										
Varicocele	..	..	..	..	..	..	1	..	..	..
Hydrocele	..	..	..	..	3	..	..	..	6	..
Orchitis (not Gonorrhœal)	..	..	..	..	..	..	4	..	..	..
Sarcocele	1	..	..	..	..	..	2	..	1	..
7. Locomotive System:										
Hydrarthrus	..	..	..	..	4	..	1	..	1	..
Anchylosis	..	..	..	..	1	..	..	..	..	..
Periostitis	..	..	..	..	..	..	3	..	2	..
Necrosis	..	..	..	..	..	..	3	..	..	..
8. Integumentary System:										
Urticaria	..	..	..	..	..	..	4	..	2	..
Eczema	..	..	..	..	1	..	7	..	2	..
Herpes	..	..	..	..	..	..	6	..	4	..
Impetigo	4	..	..	..	2	..	3	..	4	..
Psoriasis	1	..	..	..	4	..	..	..	1	..
Lichen	..	..	..	..	..	..	4	..	..	..
Tinea Capitis	..	..	..	..	2	..	..	..	..	..
Pemphigus	..	..	..	..	..	..	2	..	..	..
Sycosis	..	..	..	..	..	..	..	..	1	..
Phlegmon et Abscessus	56	..	12	..	72	..	136	..	84	..
Paronychia	3	..	..	..	6	..	4	..	2	..
Ulcus	43	..	4	..	11	..	78	..	83	2

Appendix No. XIV.—*continued.*

Stations	Australia.		Tasmania.		New Zealand.		China.			
							White.		Black.	
Strength	1,380		334		1,125		1,550		2,009	
Diseases.	Admitted.	Died.	Admitted.	Died.	Admited.	Died.	Admitted.	Died.	Admitted.	Died.
IV. *Developmental Diseases.*										
4. Diseases of Nutrition:										
Atrophia	..	..	..	..	..	..	..	..	38	1
Debilitas	..	..	..	..	1	..	42	..	107	6
V. *Violent Deaths or Diseases.*										
1. Accidental:										
Ambustio	7	..	..	..	3	..	5	..	4	..
Insolatio	..	..	..	..	..	..	1	1	..	..
Submersio	..	1	..	..	..	1	..	1	..	..
Fractura..	2	1	2	..	6	..	2	..	2	..
Contusio..	55	..	4	..	73	..	40	..	41	..
Vulnus Sclopetarium	..	..	..	..	1	..	19	..	..	..
„ Incisum	15	..	6	..	11	..	13	..	10	..
Luxatura	2	..	9	..	5	..	2	..	..	..
Subluxatio	23	..	..	..	16	..	21	..	3	..
Amputatio	1	..	..	..	..	..	..	..	..	..
6. Punitus	1	..	1	..	..	..	5	..	1	..
Diseases not stated	36	..	7	..	35	..	80	2	6	..
Total	913	14	139	5	716	5	4,314	65	3,283	109

REPORT

OF THE

SANITARY BRANCH FOR 1859.

BY

T. G. LOGAN, M.D.,

INSPECTOR-GENERAL OF HOSPITALS AND
HEAD OF THE SANITARY BRANCH.

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[illegible]

[illegible]

[illegible]

TO THE DIRECTOR-GENERAL
OF THE
ARMY MEDICAL DEPARTMENT.

SIR,

AGREEABLY with instructions prescribed for the conduct of business by the Heads of Branches of the Army Medical Department, I have the honour to report to you, with relation to the Sanitary Branch, for the year 1859.

THE HOME STATIONS OF THE ARMY.

THE special sanitary duties of Medical Officers, instituted by the new Code of Regulations, not having been generally entered upon until after the publication of those Regulations in a complete form in October of this year (1859), the discharge of these duties, consequently, bore upon too limited a remaining portion of the period for sufficient results to be gathered as to details, and such as to afford matter for any comprehensive report on this occasion. A general allusion can, in consequence, alone be submitted under the main heads of sanitary reference.

1. The leading hygiènic measure of the year was the extension of the new system of ventilation, introduced by the Barrack and Hospital Commission, to the principal barracks and hospitals in the United Kingdom and Ireland.

2. In the means of personal cleanliness much was done, and at various stations; better furnished lavatories provided for the use of the troops; baths put up, so as to afford means of more private and thorough ablution, and in the proportion of 1 per cent. of strength, in most barracks of magnitude and importance, the intention being the gradual provision of this necessary element of comfort and health in all.

3. Latrine and urinal accommodation, at stations where more urgently required, also met with, from time to time, improvement or extension.

4. The drainage and sewerage of camps, barracks, hospitals, &c., were brought by the new sanitary regulations under the surveillance of the Medical Officers, and much future benefit must result to the health of the troops from

this duty of supervision, whereby all defects on these points are to be represented to the authorities for consideration of such early remedies as may be applicable.

5. Generally, it may be stated, the troops were supplied with rations of a fair average quality at contract prices, and the soldier's interests in this respect may be said to be at all times protected, as any deterioration of supplies can be immediately checked, the system of holding Boards of Survey (of which a Medical Officer is a member) proving a sufficient guarantee against inferior or defective articles of bread or meat being introduced. On such occasions, if necessary, the substitution of better provisions is enforced at the contractor's expense.

The extra ration of groceries, by the scale of which the soldier is provided, through the Commissariat agency, at stations where available, with sugar, coffee, tea, salt, pepper, &c., in fixed daily quantities, must prove a great boon in securing to him sounder articles, at a very small daily stoppage from his pay, than he could possibly obtain otherwise for himself. This extra ration furnishes also to him an additional quarter of a pound of bread per diem.

6. Means of Cooking.—Under this head great improvements have been introduced at many stations, and means afforded of varying the mode of cooking the men's food, which cannot fail to exercise a beneficial influence upon their health.

7. In the military hospitals a new scale of diet was brought into general use, and with great advantage to the patients, whether in sickness or convalescence.

8. The drinks and canteen supplies for the troops, hitherto subject to no sufficiently systematic observation, will henceforth come under frequent notice and report of the Medical Officers as a portion of their sanitary duty, and it is to be expected that the sale in these establishments of inferior, adulterated, or noxious articles will, through surveillance and representation to the military authorities, in a great measure be prevented.

9. In the clothing of the troops there was no important change of a general character; but over (watch) coats, for the protection of men on sentry by night, and during inclement weather, articles which had been introduced at Aldershott in 1858, and found very beneficial, were supplied at many other stations.

10. The duties of the troops on the home service were of the usual character; varying from the healthy military exercises by day, with a large proportion of nights in bed, at the

several camps, to the more arduous duties of frequent guards, and greater night exposure, in the dock-yard garrisons; but they do not appear to have exercised any marked prejudicial effect upon the health of the men at any station.

The sanitary transactions of the year at the Foreign Stations, from whence reports have been received, may next be passed in review successively.

THE IONIAN ISLANDS.

The average state of health of the troops at the several islands, throughout the period, speaks for itself as to their duty and employment having been neither excessive nor in any way injurious. The only exception to such general condition of health occurred for a time at Fort Neuf, a locality under unfavourable sanitary circumstances, being close to the point of discharge of town sewage, which contaminates, to a wide extent, the tideless water of the bay at the immediate base of the fort.

In June the strength of the garrison of Corfu was increased by about 1,100 men; to meet which increase several alterations and additions to the accommodation were made. The offices of the Royal Engineers and Military Store Department, previously occupying a portion of the best barrack in the citadel, were removed, and the families of married soldiers (to the extent of eighteen families) were lodged in a well-aired house hired for them, thus materially relieving the barrack. Five brick huts were built on suitable ground on the Island of Vido, for 140 men, with kitchen and ablution room. Four comfortable, although temporary, wooden huts were also, in the autumn, erected at Fort Abraham; these, with the large barrack room previously existing at this post, afforded good accommodation for two companies of a regiment.

A roomy and well-ventilated gymnasium was erected within the citadel, a great desideratum, especially during the summer months. It was also contemplated that similar means of healthy exercise and recreation should be provided at Fort Neuf, at Vido, and probably at Cephalonia and Zante.

Many alterations and improvements were effected in the hospital accommodation at Corfu in course of the year. Its administration was changed from that of the regimental to the general hospital system, an arrangement by which an increase of accommodation for the sick (so necessary to meet the augmentation of the force) was obtained. A further extension of accommodation for sick of the garrison was proposed by the Principal Medical Officer, who recommended that a hospital for forty patients should be constructed on the Island of Vido, and one for ten or twelve at Fort Neuf.

In regard to the diet of the soldiers, the system of supply through the Commissariat, by which, at an additional daily stoppage of 1½*d.* a-day, they are furnished with extra bread and groceries, instead of going into the market for them, has worked very satisfactorily and beneficially, the Government supplying superior articles at a much cheaper rate. At Corfu, particularly, abundance of good and cheap potatoes and fresh vegetables of all kinds was obtained.

Generally, in the islands, the meat was of fair quality, and as good as the neighbouring country could produce. In the citadel of Corfu, at Fort Neuf, and at Vido, there was afforded every facility for the men to have their meat baked as often as they wished.

The duties throughout the Command were light, the men having had, on average, seven nights in bed to one on guard.

MALTA.

The leading circumstance, bearing upon sanitary considerations, in this Command was the prevalence of a severe form of fever in the corps occupying the St. Elmo Barracks, but due means were taken to arrest the progress of the disease, the source of which was traced to defective drainage and sewerage, and further measures were proposed to improve the sanitary condition of these barracks especially.

On other points connected with the health of the soldiers, the supplies for their diet were good, and the duties were generally not more than such as tended to maintain an average good standard of health.

The accommodation as to cubic space per man in the various barracks and detached forts, during this year, remained very limited, and to a great extent unequalized; but a Board of Officers was appointed for the purpose of inquiring into this subject, with a view to a re-adjustment of the numerical occupation of the quarters throughout the island.

GIBRALTAR.

Deficiency of barrack accommodation in this garrison formed the main portion of the Principal Medical Officer's

Annual Report, and was the subject of representation by him to the authorities. Notification of an intended outlay by the Government (in 1860, and further in 1861), for the purpose of extending the accommodation, was received.

The sewerage and drainage of the town of Gibraltar, being upon a very defective system, greatly involve the sanitary welfare of the troops, many of the barrack buildings being immediately within the influences of such evil.

More exclusively, however, connected with the interests and comfort of the troops, much improvement is still required in the garrison as to the construction of the latrines, the provision of barrack lavatories, baths, &c., and a better and more abundant supply of water, the latter, at certain seasons, especially when the contents of the reservoir tanks are lowered, being found to be so loaded with organic impurities that the use of drip stones becomes absolutely necessary, and these were accordingly recommended to be distributed in certain proportions throughout the barracks.

THE WINDWARD AND LEEWARD ISLANDS.

At *Barbadoes* the results as to the health of the troops were satisfactory. No measures of any very special sanitary kind were carried out in the garrison, but certain defects of accommodation in the wash-house of the principal barrack, in the guard-room of the same, and in the sanitary condition of the married soldiers' quarters were duly made the subjects of report.

At *Trinidad*, the question of the position of the barracks at St. James's engaged attention in consequence of an outbreak of an epidemic of yellow fever amongst the troops occupying them, in September 1858, and which continued till February 1859, the disease being prevalent nowhere else in the island during the time.

Consequent upon the mortality at St. James's, a Commission was appointed for the selection of a more appropriate locality for the cantonment of European troops, and, if possible, on a hill site, a desideratum forcibly suggested by the experiment of the mountain station of Newcastle, in Jamaica.

Of the above Commission Dr. Ross Jameson, Deputy Inspector-General of Hospitals, was appointed a member, and, as *ex-officio* the sanitary representative, he submitted the following memoranda for the joint consideration of his colleagues:—

"1. The great cause of tropical disease (be that what it "may) cannot exist beyond a certain height above the level of "the sea.

"2. Judging from experience, more especially as derived "from the history of the mountain stations of Jamaica, this "height, within certain limits and under certain conditions, "is variable. Under all circumstances, however, 2,500 feet "is the very lowest elevation where, in a sanitary point of "view, it would be judicious to locate troops in the West "Indies, and a much greater height (say 4,000 feet) is "always to be preferred when practicable.

"3. The edge of a table-land is (*cæteris paribus*) less "advantageous than any other part of such a position. The "crest of a serrated mountain is likewise to be avoided if "possible, both for the same reason, viz.:—

"The cause of tropical disease, when generated in the "subjacent valleys, can be carried upwards to a very consi-"derable height. Hence, in estimating the probable salu-"brity of either locality, attention must be paid to the "supra-marine elevation of the neighbouring valleys or "ravines, as well as to the actual height of the locality "itself.

"4. With reference to Trinidad, as it is some degrees "nearer the Equator than Jamaica, due regard should also "be paid to the botanical productions of the mountain "ranges inspected. As long as these remain purely tropical, "a sufficient elevation to insure absolute safety has not "been attained."

The greatest height in the Island of Trinidad is estimated not to exceed 3,000 feet. A site, at about 2,200 above the sea-level, was considered by Dr. Jameson as probable to be superior, for the sanitary condition of European troops, to any other available spot on the island, however much it might fall short of the standard of salubrity enjoyed at the Jamaica station, Newcastle.

The year closed without any decisive results from the Commission's inquiry, military consideration of the necessity of proximity to Port of Spain, the chief town of the Island, competing with the more purely sanitary question.

From the other islands of the Windward and Leeward group there have been no reports indicating any special sanitary transactions as adopted in course of the year.

Generally, the troops throughout the Command were not called upon for any beyond the ordinary light duties. The provisions supplied to them were of as good quality as could be furnished by the Commissariat, and the meat portion of the men's rations consisted of salt pork or beef one day a-week, fresh meat being supplied for the other days. Vegetables were, at St. Lucia, not so abundant as could have been desired, but at other stations sufficiently so.

JAMAICA AND ITS DEPENDENCY AT HONDURAS.

From this Station there was little in the reports of 1859 for specific notice.

During the year glass sash-windows were substituted for the open jalousies in the hospitals at Up Park Camp and Port Royal, an arrangement which had been found very requisite for these establishments on sanitary considerations. The latrines at Up Park Camp and Kingston were placed in process of improvement from a previous very defective state. Drainage operations were also begun on the marshy ground at the station of Stony Hill.

Honduras may here be adverted to as a station under the Jamaica Command. With the exception of a very few men of the Royal Artillery, it is garrisoned by a detachment of black troops. At the principal military post, Belize, the Senior Medical Officer recommends the provision of entirely new barracks, and represents the necessity for more tanks for the water-supply. He also suggests that the marsh in rear of the New Town Barracks should be drained and cultivated, and a tract of bush in their neighbourhood be cut down, and a clearance made which would prove of much benefit. These sanitary measures must, it may be inferred, involve the question of time and means.

BERMUDA.

The inadequate barrack accommodation rendered a strict enforcement of sanitary measures peculiarly necessary, and, beyond doubt, that of encamping about one-half of the troops during the summer months was the great means of preservation of their health during this season.

For the head-quarters of the regiment stationed at St. George's, and its detachment at the central town of Hamilton, new barracks, on the enlarged sanitary principles of the day, are much demanded by the specialty of the climate, and the frequent epidemics of yellow fever.

Greater means of amusement and physical recreation are still an especial requisite, to divert the men from degrading habits of intemperance. A reading-room at St. George's, more commodious and more widely supplied, was stated to be much wanted; and a gymnasium would, no doubt, prove a great and salutary boon towards filling up, with interest, the many tedious hours of an otherwise listless day.

NOVA SCOTIA.

The cubic space per man in garrison at Halifax had been generally insufficient, but a new barrack, near Fort Needham, would be ready for occupation soon after the close of the year.

Many sanitary defects as to system of latrines, the want of proper ablution rooms in the citadel of Halifax, and increased means of ventilation in certain casemated barracks, were brought to notice. The means of roasting and baking meat in the barrack kitchens had been defective throughout the Command. Ovens were, however, in course of construction in four of the barracks at Halifax, an initiatory towards a general measure of the kind. Many cases of pulmonary disease having been considered attributable to wet feet on duty—the soldier's ordinary boot being of insufficient fabric to resist thaws and slushes of snow—a provision of what are called American "rubber-boots" for the men on guard was strongly recommended by the Principal Medical Officer.

The sickness and mortality in the Command, notwithstanding many sanitary defects yet unmet, proved to be inconsiderable, and were not attributed by the Principal Medical Officer to any general causes or influences susceptible of direct remedy or improvement.

CANADA.

The reports from this Command pointed out intemperance and a want of mental occupation and active bodily exercises as causes of disease.

Limited cubic accommodation and a want of means for variety in cooking the men's diet are also mentioned.

The prospective withdrawal of a regiment from the station, would, however, obviate the want of barrack accommodation, as to the cubic allotment, very materially; and the deficiency of cooking apparatus was to be brought under the consideration of the authorities.

ST. HELENA.

The duties of the corps stationed on this island partake of no severe character. In addition to their ordinary drills, guards, and parades, the men perform occasional "fatigue" duties connected with the Commissariat Department, in landing coals, provisions, &c., for the garrison, and supplies for the Royal Navy, and for which they receive a working pay.

In regard to barrack accommodation, the married soldiers' huts were brought under the notice of the local authorities, in special communications, by the Senior Medical Officer, who represented them as unfit for occupation in a sanitary point of view; and improved conveniences and extended cubic space in the barracks were also recommended by him. Each man had about 650 cubic feet, but still an insufficiency for the climate.

The hospital is commodious for the force, and is well ventilated.

The diet of the troops was judiciously regulated, and afforded the best variety which the produce of the island admitted. A regimental garden here affords an abundance of fresh vegetables, in good variety, for a considerable portion of the year, and at an almost nominal rate, to pay for seeds and implements.

On three days of the week fresh meat (beef or mutton) is supplied to the men; salt beef or pork on the other four; the only objection being the very inferior quality of the salt beef supplied from the Cape of Good Hope, a circumstance it has since been arranged to remedy by having all salt provisions of the kind furnished from England. The water supply is, usually, abundant and sufficiently pure. A new bath room for the men was added.

In the way of amusements for the troops, a temporary fives' court had been fitted up, and skittle-grounds for each barrack were made the subject of renewed recommendation; also that these grounds should be covered over, so as to admit of resort to them by the men at all leisure hours of the day, without evil consequences from exposure to the sun.

CAPE OF GOOD HOPE.

A Sanitary Report by the Principal Medical Officer, but which bears only on the earlier portion of the year under review (1859), sets forth in general terms that the more valuable and urgent of the suggestions, emanating from the various executive Medical Officers serving at the many and widely detached stations of this Command, were individually submitted to the military authorities, and that efforts were made to apply all practicable means for correction of any sanitary evils admitting of amendment.

In June of this year, the Director-General, the late Mr. Alexander, submitted a proposition to the Authorities, recommending that the Cape (Cape Town or its neighbourhood) should be tested as a Sanatorium for invalid soldiers from India, to many of whom he conceived it would prove a restorative. From much personal experience of its provinces as to climate, he had also previously submitted a suggestion that, considering the large force of Europeans requisite in India, and likely to be so in future, a general depôt of troops might advantageously be established in the eastern districts of the Cape, for all regiments serving in India; that recruits might be sent to this depôt; and that, as after being there accustomed to camping, and more or less to a practical field life, they would become inured to climate, they might be drafted to India as exigencies required, for which service he thought they would then be found much more effective than the numerous detachments of lads of undeveloped constitutions annually dispatched from England to India, and destined, in too many instances, to succumb there to climate during the first hot season. He was, further, of opinion, that men, found unfitted for India, might continue to serve efficiently at the Cape and that, in many instances, the climate of the latter would be preferable for certain constitutions even to England.

MAURITIUS.

No important measures of a sanitary character were carried out, either as to the barrack or hospital accommodation for the troops at this island. The site of the hospital at Port Louis is pronounced objectionable, and the selection of a better is projected when colonial funds shall afford the opportunity for construction of a new one.

THE AUSTRALIAN COLONIES.

At *Melbourne* the position of the barracks, on the border of an extensive undrained morass, liable to inundation from the River Yarra, must, in sanitary respect, ever remain one of most objectionable choice, notwithstanding it is conceived that remedy might be applied, to a great extent, by engineering efforts, the ultimate cost of which would be repaid, not only in the preservation of health, but also in value of reclaimed land. The views of the Colonial Government are, however, it is stated, not ascertained on this subject. With regard to the military hospital at Melbourne, steps have been proposed to remove the establishment to another and less objectionable site than at present held with relation to the locality of the barracks.

At *Sydney,* defective drainage of the barracks was reported as still existing, and much was yet unprovided for the troops in respect of the means of ablution and varied cooking. Intemperance was reported to be both a direct and indirect cause of disease. The soldier's comfort, and attractive means towards his healthful recreation, being insufficiently provided for, were circumstances reasonably assumed to lead to the vice in no inconsiderable degree.

Hobart Town.—Correspondence arose on the subject of the want of any proper means of ablution for the troops, and on the defective state of the hospital and barrack latrines. Steps were taken to meet the former necessity for the men. Want of colonial funds, as represented, unfortunately postponed remedy of the latter.

New Zealand.—Throughout this Command, many sanitary wants were still unmet. At the head-quarter station, Auckland, a distinct military prison was especially needed, also a fives' or racket-court for the healthy recreation of the men, an inclosure of the hospital grounds for purposes of discipline, and a rectification of an offensive system of the barrack latrines. At Wanganui, greater and improved barrack accommodation was called for, and increased cubic space for the cells attached to the guard-house. At the post of Napier, a detached hospital was required, the sick at this station being unavoidably and very disadvantageously accommodated in a barrack-room:

Additional facilities for variety of cooking for the troops were greatly required at all the stations.

The foregoing defects and sanitary wants in the New Zealand Command were brought under notice of the local military authorities, and, in further course, submitted for the consideration of the home authorities, with a recommendation for their remedy and fulfilment.

The issue of the latter representation was, in reply, to the effect that the state of the colonial funds would not admit of the measures being effected in whole, but that it had been recommended to the Colonial Government that the more urgent works might be attended to at once.

CEYLON.

Various movements and exchanges of the detachments of European troops were recommended by the Principal Medical Officer upon sanitary grounds, the recommendation was accepted by the authorities, and acted upon in the month of December. Beneficial results to health were anticipated. Improvements in hospital accommodation, at certain of the stations, were submitted for consideration of the Government authorities, and defective drainage of the Fort of Colombo and of the European parade-ground at Galle, was brought under notice of the Executive.

INDIA.

In the *Bengal* Presidency, this year, circumstances were very exceptional throughout most of its upper provinces, and efforts were urgently continued to provide barrack and hospital accommodation, of permanent or temporary character, to meet the requirements of a largely-increased European force separated into cantonments after field-service during the mutinies. The period required the active supervision and constant care of the Medical Officers for preservation of the health of the troops at many Stations, especially where they, unavoidably, were under insufficient shelter from climate during the hot season. The monthly Sanitary Reports received from the Officers evinced the great activity and close attention they must have devoted to all matters of drainage, cleanliness, and sanitary police of cantonments, camps, and their vicinities, ventilation of barrack-dwellings, means of ablution for the soldiers, and the many other details connected with the health of the men and the duties of Sanitary Officers; the Senior Medical Officer present at each Station having been appointed to the special and responsible charge, as Sanitary Officer, his diary of transactions was systematically submitted to the Inspector-General of Hospitals.

Madras.—At many of the Stations occupied by the British regiments the barracks were in a transitional and improving state. A new cavalry barrack was in process of construction at Bangalore, on the race-course, and was reported as being placed on high ground, free from any obstructing circumstances as to ventilation. The Principal Medical

Officer, the Deputy-Inspector-General of Hospitals, gave his opinion that the duty and employment, in cantonment or garrison, exercised no injurious effect on the health of the troops, many of whom, however, had been subjected to severe exposure during the late mutinies, and may have thereafter suffered more or less. It was thought the vice of intemperance was diminishing, and hope was entertained that, with increased sources of employment and recreation as afforded by gymnastics, racket-courts, reading-rooms, &c., the taste for the debasing vice would be found to wear out. Many such proposed means, however, were negatived, for the present, on financial grounds.

The newly-established red serge frock was found to answer well as a substitute for the cloth tunic, the only objection to the former being its nondurability; an improved manufacture might remedy this particular defect. The shako was no longer in wear, and the wicker helmet with white cotton cover was much approved of and in general use.

In the diet of the troops, an improved quality of meat, and, at many Stations, a more abundant supply of vegetables, would have been desirable, could they have been procured.

In the furniture of the soldiers' bedding and bedsteads, generally defective throughout India, little improvement had taken place in this Presidency, although pressing representations appear to have been made on the subject through its highest military authority. Iron cots were recommended for more general use.

Bombay.—The Annual Sanitary Report of the Principal Medical Officer had been received up to the 31st March 1859 only. He states that due means were adopted, during the term of his report, by the Government and military authorities to remove, if possible, any causes of disease among the troops. Careful surveillance appears to have been exercised in regard to the quality and quantity of the soldiers' dieting, to proper adaptation of their dress in relation to season, climate, period of day or night, in which they were employed, and to circumstances of field-duties.

In respect of the troops not employed in the field (including some regiments newly-arrived in the country), their sanitary condition, from their not having been exposed as others had been consequent upon the mutinies, was generally satisfactory.

CHINA.

Under limit of report, on this occasion, to the close of 1859, it may be stated that, in the regiment quartered at

Hong Kong, the surgeon was of opinion that the night duties, and insufficiency of nights in bed, to a certain extent predisposed the men to the diseases of that insalubrious climate. The Principal Medical Officer concurred in such opinion, and added, further, of his own, that prolonged fasting while on night duty, and want of adequate barrack accommodation for the climate, were greatly accessory; the whole of these alleged causes met with his careful consideration, and, at the time of concluding his annual general Sanitary Report, were obtaining such remedies as the exigencies of the service and time would permit.

The topographical character, however, of Hong Kong was acknowledged to preclude improvement to any considerable extent in the health of European troops, and its retention as the chief military station of the Command could not be thought desirable in a sanitary point of view.

The Principal Medical Officer's report refers to the circumstance that the annual expenditure of men by death and invaliding had been averaged at 20 per cent., being more than double of what it is in India, and that, notwithstanding every means had been taken, and no expense spared, to preserve the health of the troops, the results were still very unsatisfactory.

The lamentably reduced state of health in which the 59th Regiment embarked from Hong Kong, and the high rate of sickness in the relieving corps (the 2nd Battalion Royals), almost immediately upon their establishment at the station, raised the consideration early in this year whether a hill-site on the island could not be made available for the purpose of a local sanitarium to some extent. After an examination of three or four sites, one under the Victoria Peak, and about 1,400 feet above the sea, was ultimately concluded to offer the best advantages, and, from experience of the value of elevated positions in the East and West Indies, a trial of this site was finally recommended. It was found to be of a temperature 10 degrees lower than that of the town of Victoria, and the locality promised sanitary advantages in regard to a supply of good water, of very perfect natural drainage, and in offering a front to the south-west monsoon and its cooling influence. The ascent could be rendered practicable by improvement of the pathway in little more than an hour or so from the town and barracks.

It remained a project to establish huts for forty or fifty men to initiate the experiment, when circumstances of the impending war supervened.

Hostilities having been decided upon, and preliminary arrangements undertaken for the formation of the expeditionary army, the furnishing of its supplies, and the selection and fitting up of the hospital ships, the following suggestions had also been submitted by the Director-General for the consideration of the Minister of State for War, with a view to the preservation of the health of the soldiers to be engaged on the service :—

1. That marquees and tents be issued in sufficient number for the officers and men.

2. That, in addition to the usual Indian clothing, a supply of flannel shirts, flannel drawers, cholera-belts (flannel), worsted socks, flannel serge trousers, blankets, well ventilated helmet-shaped solar topees, good boots of English manufacture, and long knee-boots of the same description, water-proof long cloaks, and water-proof sheets, be provided for the use of the troops.

3. That the Commissariat Department be requested to send out a large supply of lime-juice for the use of the force; also preserved meat in tins ; beef slightly salted, but sufficiently so to keep for a certain period (a regular supply of which should be forwarded from time to time); preserved potatoes and other vegetables, so as to be available when fresh vegetables cannot be procured. Ale and porter to be given out as a ration, and rum sent in sufficient quantities for occasional use, and under circumstances when malt liquors are not forthcoming. That coffee, roasted and ready ground, be supplied, and tea (which no doubt could be obtained on the spot). That when meat, although fresh, may be of poor quality and not sufficiently nutritive, a greater quantity than one pound of it be allowed as the ration; and that supplies of flour be sent, and ovens provided, as well as a party of experienced bakers, so that bread may be supplied regularly to the troops.

4. That a stock of quinine wine be provided, in order that a ration of it may be given to the men (at the recommendation of the Principal Medical Officer), previous to, and during the unhealthy months, or when the soldiers are required to proceed up rivers, or on being encamped in the vicinity of marshy ground. A medical officer should be present when the quinine wine is issued, and to witness the same being drunk by the men.

5. That no more than one day's ration of food, malt liquor, or spirits, be issued to the soldier at a time; unless under peculiar circumstances, and by the order of the Officer commanding.

6. That arrangements (if possible) be made so as to insure troops, proceeding on any duty before breakfast, being furnished with a cup of hot coffee or tea, before they start.

7. That a supply of "Soyer's Camp-cooking Apparatus" be sent out, in order that the cooking may be properly performed, and in messes.

8. That a sufficient number of iron store-houses be forwarded, and placed in charge of store-keepers.

9. That all bales or boxes should not weigh above 100 lbs. each, so as to be convenient for transport by coolies, mules, or ponies.

10. That a hundred pairs of cacolets, and a hundred litières, with pack-saddles, surcingles, and bridles complete, be sent out.

11. That a large supply of disinfectants be forwarded for the use of the force, and that men from the different ranks of the Medical Staff Corps, be sent out in sufficient numbers for every hospital establishment, whether general, regimental, ships, &c.

Under the new Medical Regulations for Field Service, a Sanitary Officer to the Expeditionary Army, and to be attached to the Quartermaster-General's Department, was selected and furnished with instructions for the performance of his special duties, as conveyed in the annexed Memorandum:—

1. You will accompany the Quartermaster-General, Deputy, or Assistant Quartermaster-General of the Force, or such Officer as he may appoint, on each occasion of selecting buildings for occupation by troops, whether as hospitals or quarters, temporary or for more permanent purpose. You will carefully examine into their sanitary condition, as respects cleanliness around and within the buildings, drainage, ventilation, facility of water supply, and all other points likely to affect the health of the troops, or welfare of sick; and you will advise the Quartermaster General, or his Deputy, on all such points, pointing out every sanitary defect requiring removal or remedy.

2. Whenever troops are to be landed for the occupation of towns, villages, or points of the country, you will make a careful survey of the same, and submit recommendations for organizing a proper sanitary police to preserve cleanliness, and for the removal of nuisances as well as for the execution of all measures you may consider necessary to protect the health of the troops in occupation.

3. On the selection of any site for an encampment becoming requisite, you will proceed with the Quartermaster-General or his Deputy, for the purpose of submitting your opinion on the salubrity, or otherwise, of the proposed position; and, when the locality shall have been decided upon, you will make such recommendations as you may deem necessary respecting the preparation of the ground, the distance of tents or huts from each other, the number of men to be placed in each, (taking into consideration exigencies of the service, as they may from time to time arise and vary); the maintenance of cleanliness throughout the camp; the best means of securing and preserving in a state of purity the supply of water for the use of the troops; the position of latrines and slaughtering-places; the early removal of all collections of refuse, and its disposal by burning, or otherwise; also as to the interment of the dead, and burying of carcasses of animals, &c., at sufficient distances from the camp—to obviate evil consequence to the health of the troops. You will also bestow great attention on the general drainage within the camp, and in proximity to it.

4. You will keep yourself constantly informed of the general condition of any occupied town or camp, including all hospitals, as to the general cleanliness and ventilation, pointing out all defects of these, and of the surface drainage, with a view to the earliest remedy; as also of other local matters affecting the health of the force, wheresoever distributed.

5. You will make a daily inspection of the whole camp, or occupied portion of a town, giving your earliest attention to the appearance of any disease likely to become prevalent among the troops; examine into the cause of the same, whether such disease proceeds from, or is aggravated by, sanitary defects in cleansing, drainage, nuisances, over-crowding, defective ventilation, bad or deficient water supply, dampness of site, marshy ground, or from any other local cause, or from bad or deficient food, intemperance, unwholesome liquors, unripe and unsound fruit, defective clothing, want of proper shelter, fatigue, exposure of the men to too great heat or vicissitudes of weather; upon all specialties of which kind you will immediately submit a report to the proper authorities, viz., the Officer commanding and the Principal Medical Officer, setting forth, also, on the occasion, the remedial measures you would propose for their removal. You will observe the due carrying out of these, and report daily upon the results of the same for the information of the General in command of the force, and for so long a time as may be necessary; sending copies of such reports and recommendations to the Principal Medical Officer.

6. Whenever the troops may have to advance, by line of march, you will accompany the Quartermaster-General of the force, or the officer acting for him, and collect as much information as possible in regard to the medical topography of the district, with special reference to places which ought to be selected or avoided for camping grounds.

7. Should the force have to advance through malarious districts, or at unhealthy seasons, you will indicate the best means of mitigating or preventing attacks of disease on the march or advance.

8. With reference to the above object, it will be very requisite that the men should have some refreshment, as coffee, before marching, and, from the very favourable result of its use in the China Command, quinine wine is to be recommended for use during the months when fever and bowel complaints prevail, or at any epidemic season; and of this prophylactic each man should have a daily ration, to be taken in the presence of a responsible officer.

9. In the case of operations by river you will recommend that, before any troops are disembarked for action on shore, they should have refreshment, as coffee or tea, if it be at an early hour, before leaving the ships; and, should they return on board the same day, proper arrangements should also be made for their refreshment, without delay.

10. In the course of river expeditions, you must, if possible, daily visit each vessel conveying troops, make inspection, and inquire into all sanitary circumstances on board, the general cleanliness, effectiveness of ventilation, the regular and proper use of deodorants and disinfectants between decks, &c., urging upon the medical officers the strictest attention to these points, and that they should make daily inspections of the men under their charge, in order to detect the earliest appearance of scorbutic or other zymotic disease, especially Asiatic cholera, among them.

11. It will be your duty, systematically and regularly, to inquire into and examine the nature of the supplies and provisions for the troops, also into the constitution of the soldier's ration, and whether it is sufficiently varied in its constituents and amount. You will also satisfy yourself as to the sufficiency of the means and appliances for

cooking, and whether the rations are properly cooked, immediately reporting all failures and special defects, with your recommendations, in these respects, for the information of the General Officer in command and Principal Medical Officer.

12. As the force may be expected to encounter great variety and considerable extremes of climate, it will become an important duty for you to regard the clothing of the troops, so as to recommend that it be adapted and modified to the exigencies of weather and season, especially considering the night duties, and those entailing exposure to the sun. Further, on this subject, it has been experienced that a great evil to be guarded against in China is the influence of sudden chills, and the best efforts of every officer and non-commissioned officer should be directed to prevent the soldier sitting in huts, tents, &c., with his outer clothes off, or heedlessly open.

13. Under the circumstances of the war, scurvy may be expected to be met with to a considerable extent, and, therefore, lime-juice, with sugar, in the shape of a ration, should be issued to the troops generally, three or four times a-week, and the men should be seen to consume it.

14. With the sanction of the General in command, and that of the Principal Medical Officer, immediately on commencing your duties as Sanitary Officer, as well as upon all subsequent occasions that may be necessary, you will issue such instructions, regarding sanitary precautions to be observed for protecting the health of the troops, as may be deemed requisite for the guidance of Medical Officers in carrying out the same in their respective charges.

15. You will obtain, weekly, sanitary reports from all Medical Officers in charge of troops, drawing up from them a general report upon the sanitary condition of the army, for the information of the Commander of the Force and Principal Medical Officer, and you will transmit through the latter a fortnightly report to the Director-General, embracing all the specialties of sanitary occurrences and transactions that have taken place during the period.

16. It is to be clearly understood that the Principal Medical Officer is to be kept minutely informed of all recommendations and reports which you have deemed it necessary, in the performance of your important duties, to make to commanding or other officers.

17. Local circumstances will, doubtless, present many conditions beyond the scope of these general instructions, and to all such it will be your especial duty to bestow your best judgment and constant care.

It being intended to publish, from year to year, selected papers on Medical Topography of Stations, with the local and special influences on the health of the troops, an arrangement by which Medical Officers, in a course of years, may be in possession of a valuable range of information as to the principal stations where troops are called upon to serve, the following are submitted, on the present occasion:—

1. A report on the climate and topography of Deesa, Bombay Presidency, by Surgeon W. Hanbury, 33rd Regiment.

2. A topographical and descriptive account of Mount Aboo, a hill sanatorium, within forty-five miles of the former, by Dr. Ogilvy, Assistant-Surgeon, 33rd Regiment.

These papers are of especial interest at the present time of the question of the future cantonment of European troops in India.

3. A topographical and sanitary report of Umballa and its vicinity, one of the main military stations of Upper India, by Dr. Kendall, Surgeon, 7th Hussars.

4. Ghazeepore, in one of the lower districts of the same (Bengal) Presidency, by Mr. Fleming, Surgeon, 37th Foot.

5. An abstract of the Annual Medical Report of the detachment of the Royal Engineers stationed in British Columbia to the end of December 1859, with Table of Meteorological Observations taken during the year ending 31st May, 1860, by Staff Assistant-Surgeon Seddall. This short narrative of a special service on new ground of a young colony may present a corresponding interest.

6. A report on the topography of the military stations in British Guiana, with a brief account of the colony, &c., by Surgeon-Major H. C. Reade.

I have the honour to be,
Sir,
Your most obedient Servant,
T. G. LOGAN,
Inspector-General of Hospitals.

REPORT BY W. HANBURY, ESQ., SURGEON 33RD REGIMENT, ON THE CLIMATE AND TOPOGRAPHY OF DEESA, GUZERAT.

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1. *Topography.* — The province or district of Guzerat represents a flat, fertile plain, little elevated above the sea. In this district Deesa is placed, at the northern extremity or angle; the range of hills upon which the Sanatorium at Mount Aboo is built extending on the north and east, at a distance of thirty or forty miles, "The Runn of Cutch" and the Gulf of Cutch being to the west, and the station and city of Ahmedabad to the south, and distant about ninety-five miles. A small river, the Binmass, which takes its origin among the hills above referred to, flows in a full stream, close to the bazaar and village of Deesa during the rainy season, and empties itself into the Gulf of Cutch, but, throughout the greater part of the summer, the river bed contains scarcely any water, and gives passage only to a small trickling rivulet. To the north-east of this river, and of the village of Deesa, is the military station of Deesa, nearly two miles distant from the latter, but closely abutting upon the former. The station thus situated covers a triangular tract of deep, sandy, fertile loam, the aspect of which slopes, with tolerable uniformity, towards the river and the bazaar; a shallow, open, sandy nullah bounding it on the southward, and a similar nullah on the north separating the Horse Artillery Barracks and Native Infantry lines from the barracks for European troops. The nullahs commence on either side of the European lines, and they widen as they approach the river and bazaar. Now, as these nullahs form the natural water-courses to drain the station during the rainy season, it follows that the European troops are located upon the most rising ground, and, in point of fact, their barracks are situated on an open plain, elevated at least thirty feet above most other parts of the station. During the greater part of the year there is a total absence of vegetation, and the station and surrounding districts present an aspect of a painfully level, arid plain, knee-deep in sand; but, in the rainy season, the surface becomes covered with vegetation, grass and weeds, and, at all times, the trees growing in the officers' compounds, and in rear of the men's barracks, are agreeable features in the scenery.

2. *Climate.* — The Station of Deesa, occupying the position now described, is situated in longitude 72° 17′ east, and in latitude 24° 12′ north, and is about 400 feet above the sea level. Exposed to the influence of the south-west monsoon, the prevailing winds in the summer and autumn blow almost steadily, but with short intervals of oppressive calm, from the west and south-west, while, from its close proximity to the hills on the north, the atmosphere is refrigerated by winds from the north and north-east during the winter and spring months. The annual rainfall is inconsiderable. In the year 1858 it amounted only to 25 inches, and during the monsoon of the present year 1·12 inches were registered as having fallen in June, 10·12 in July, 7·62 in August, and 1·73 in September: total for the season, 20·59 inches. Owing to the extremely loose, sandy nature of the soil the rain-water is so rapidly absorbed that little of it reaches the nullahs, or natural water courses, except when the fall is heavy and long continued.

It appears, from the records of mortality, published in the Journal of the Transactions of the Medical and Physical Society of Bombay, that the climate of Deesa is almost as healthy as that of any other station in the Presidency; yet it is in many respects peculiar. There is, perhaps, no part of India in which, during the summer months, the range of temperature in the twenty-four hours is so high, nor would it be easy to point to any place in this or any other country in which the humidity of the atmosphere is so inconsiderable. But, in order to illustrate the most marked features of the climate, I beg to refer to the Appendix Table, in which is given an abstract of the meteorological observations for 1859, recorded in the Government Observatory which has been erected in the inclosure or compound of the regimental hospital. These observations were, I have reason to believe, faithfully recorded throughout, and the instruments by which they were made are suspended to a frame in the centre of a tiled shed or observatory, erected in the hospital compound, and well protected from ground radiation; and the Table referred to is accompanied by a diagram, showing the maximum and minimum of the self-registering thermometer, and the maximum and minimum humidity for each month of the year.

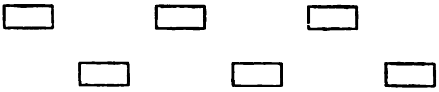
It remains only to state further, under this head, that the station was established as a frontier post of the Presidency about the year 1828, and that it is now held by a regiment of European Infantry, a troop of European Horse

Artillery, a squadron of Native Cavalry, a regiment of Native Infantry, and some Native Artillery.

3. *Barracks and Hospital, &c.*—The barracks occupied by the regiment consist of a double series of buildings, constructed on the plan so generally adopted in this country; the first of which afford accommodation to the single men of the regiment, and the second to the married men, the latter being distinguished under the name "Patcheries." The barracks, bungalows proper, are eleven in number, arranged in two parallel lines, thirty-four yards apart; the buildings in one line of which are exactly opposite to those of the other, a new barrack on the extreme right being thrown out in front of these two lines. Each of these bungalow buildings is covered by a double-tiled roof, through which open, from the interior, four ventilators (each 9 feet in length by 4 in breadth), and they are all similar in dimensions and interior arrangements. Each bungalow represents a single central room, 175 feet 9 inches long by 23 feet 3 inches wide, the height of which is 13 feet, and the verandahs are inclosed on each side at the ends of the building in such a manner as to form two small rooms. The accommodation thus obtained is supposed to be sufficient for seventy-five men, the calculation assuming that 700 or 800 cubic feet of air is an adequate provision for each soldier. Ventilation is in every respect well provided for, except at the ends of the barrack room, which are dark and gloomy, but here the end windows compensate, to some extent, for the inconvenience caused by closing in the verandah. Moreover, the aspect of the barracks is to the south-west, and thus secures for the ventilation the assistance of the prevailing winds.

It is only necessary to add, further, that all the barracks are built upon foundations little elevated above the ground, and that the floors, notwithstanding their occupation for years, are still nearly all formed of mud, plastered over with cow-dung.

From the description now given, it will be easily understood that the barracks must present a somewhat mean shed-like appearance; but, although the lowness of these buildings, the absence of raised foundations, the imperfect provision for ventilation at their ends, &c., represent very objectionable features in the accommodation, it is also to be observed that the bungalows are crowded into a very small space, most unnecessarily so, regard being given to the topographical resources of the station, and that it was a great oversight not to have constructed them chequerwise, thus:—



and at distances of 300 instead of 34 yards between these lines. The barracks occupied by the married men of the regiment, under the name of "patcheries," are five in number, and have been very recently constructed. These buildings are arranged in echelon, on the extreme left of the regimental lines, and at suitable distance from the barracks proper; and they stand upon a dry sandy plain, close to a small branch of the nullah, which defines the cantonment to the south. Each of these patcheries is 72 yards in length, surrounded by an open verandah, 8 feet 6 inches high, and 10 feet 3 inches wide, on the front and both ends, and by a closed verandah in rear; and they are all covered with a double-tiled roof, the height to the tie being about 14 feet. Further, each building is divided into fourteen compartments, for as many families, each of these compartments being again subdivided into two rooms; a large room in front, and a small room at the back, in the inclosed verandah. These two rooms communicate with each other by a large door, and the ventilation from side to side is thereby promoted, but no air can escape upwards, the roof being closed from one end of the building to the other. The shelter thus afforded is in the main very good; the patcheries are sufficiently far apart; the division of each into so many rooms secures privacy, prevents crowding, and favours a thorough and rapid, because independent, ventilation; indeed, one of the greatest objections to the barracks proper rests in the fact that their accommodation is represented by a single long dark room; a large volume of air, not being broken up into smaller masses, has a tendency to become stagnant, and crowding at different points in such a room is, at times, the necessary result of the soldiers' indiscretion, or want of discernment.

Ablution Rooms, Bath Houses.—A room or shed for ablution purposes is attached to the back verandah of each barrack, and ample means are provided for the observance of personal cleanliness, in benches, chatties, basins, &c.. while there is always available a cask of pure and excellent water for drinking, which is raised by bullocks from a well 80 feet deep. To the right of the line, and at some distance from the barracks, there are also two baths, each

4½ feet deep, 50 feet long, and 19 feet 6 inches wide, in which the men are enabled to bathe morning and evening, and the water for which is supplied by a well attached to the bath, and worked by bullocks.

Latrines and Urinals.—These had been very defective; but, after persistent representation by the Medical Officers from time to time in course of the year (1859), became at length placed in a sanitary state, in every respect satisfactory.

Cook-houses.—The cook-houses connected with the barracks are two in number—one for each wing—and occupy a position 16 yards in rear of the barracks. These buildings are of equal size: 19 yards in length by 8 in breadth; lofty, and roofed with double tiles, and afford ample facilities for cooking operations on a large scale. The head cook, in both establishments, is an intelligent Portuguese, and the soldier has no difficulty in getting his food dressed in any way he wishes, either for himself singly, or in mess with two or three companions. Indeed, between 10 and 1 o'clock daily, a great number of dishes may be seen in the process of cooking over the different cells on each side of the raised platform which runs along the centre of the kitchen, including stews, curries, puddings; and, if the troops are well fed, the fact must, to a great extent, be considered the result of the excellence and ingenuity of the cooks, for the meat is seldom of good quality, and the vegetables are occasionally deficient in variety, and of inferior quality. With respect to the patcheries, it is only necessary to state that there are three cook-houses attached to each, affording adequate accommodation in every respect, and arranged in line to the rear of the patcheries, at a distance of 15 yards.

Hospital.—The bungalows, or houses occupied by the officers of the regiment, are built in three parallel lines, immediately in rear of the barracks, and behind those, and within an inclosure covering a couple of acres of ground, stands the Regimental Hospital. This building consists of two wings, connected by a covered archway, each of which contains two large wards, and one small one. The large ward is 55 feet long and 25 feet wide, while the small wards are 25 feet square; the former are adapted for twelve patients, the latter for six patients. The cubic space thus available for each inmate (calculated on 12 feet of the altitude) being about 1,300 feet. The aspect of the building is south-west, the direction of the prevailing wind during the monsoon. The front face is closed by a verandah 147 feet long and 8 feet wide, from end to end, which is lighted by twelve large venetian-shaded windows for each wing. With this verandah, the large wards communicate by four archways. A verandah of similar dimensions extends also along the whole length of the building in rear, into which the wards open. The outside of these verandahs is supported on pillars, the open spaces between which can be closed when necessary, by letting down the sun-shade, of wicker-work and matting, constructed on a strong wooden frame.

The ventilation of the Hospital is in all respects adequate; as, in addition to the doors and windows, four ventilators of ample dimensions are distributed along the roof.

From either end of the Hospital a line of buildings is projected to the rear, which buildings are used as storehouses, surgery, serjeants' quarters, cook-house, and deadhouse, and between these is a covered passage which leads to the urinal and latrine.

The ground selected as the site of the Hospital is too close to the officers' quarters, the structure itself is too small to meet the requirements of an English regiment *at all seasons*, and the lateral buildings thrown out in rear, as representing, with the hospital, three sides of a square, are liable to much objection, and interfere considerably with the general ventilation.

LOCAL AND SPECIAL CAUSES, AFFECTING THE HEALTH AND CONSTITUTION OF THE SOLDIER.

The characteristic features of the climate of Deesa, during a great portion of the year, are a very elevated temperature, associated with a dry state of the atmosphere in the summer months, and an absence of much rain during the monsoon, while, in the winter and spring months, the weather is cool, agreeable, and invigorating; in the cold season, accordingly, little disease of any description is observed, and the mortality is trifling, but in the summer months fever, ephemeral, ardent or common continued, is a prevalent affection, and cases of apoplexy are not uncommon: and in the rainy season, July, August, September, and part of October, fever, of intermittent and remittent types, represents by far the most important disease, diarrhœa, as an associate of both, or an independent ailment, being by no means an uncommon affection. But few instances of dysentery, so fatal a disease in most parts of India, are presented in the station at any period of the year. It would appear from the Journal of Transactions of the Medical and Physical Society, Bombay, for the year 1851-2, that fever is not only the *disease* par-excellence of Deesa, but that the mortality, in proportion to the number of cases treated, is even greater than at the Presidency, and double that of Poonah or Belgaum, that it amounts to 41·89 of the total mortality, and that "more deaths occur at the station from fever alone, than from pulmonic affections, diarrhœa, dysentery, cholera, and hepatitis, added together."

I may add that the experience of the regiment illustrates, thus far, similar results in connection with the climate, for fever was at once the most prevalent and fatal disease, and dysentery an affection of very rare occurrence.

The mortality and amount of disease, as well as the characters it assumes, must thus be referred in a great degree to the effect of season and climate; it is unnecessary, however, to dwell on the facts, since they are not preventible, though, if it be true that Mount Aboo, three marches distant, affords eligible ground, as a site for a barrack, several thousand feet above the sea level, in a cool climate, it may perhaps be allowable to inquire whether any urgent military necessity exists for keeping up the station at all. Meantime, we have to notice some other causes which may have contributed, though in a much less important degree, to render the soldier inefficient.

The regiment, as at present constituted, is made up of two-thirds by men who came out with it from England, and one-third by recruits who arrived in India in 1858 and 1859, October and November of the former year being the months during which the great majority, viz. 300, landed in the country. The effect of this constitution of the corps, as expressed in disease, has been marked, if not peculiar. The men of the former class, being acclimatized, suffered little from the graver forms of fever, but were frequently affected with the disease in the intermittent type, doubtless in many instances having contracted a disposition to it on a previous occasion: on the other hand, the greater age and previous habits of living, acted so obviously as predisposing causes of apoplexy, or *coup-de-soleil,* that all the deaths from this cause, five in number, were recorded among them; while, at the same time, these men monopolized also all the cases of delirium tremens, though happily few in number, and in no instance attended with a fatal issue. The soldiers of the latter class were especially liabel to fever, and often contracted the disease in a remittant type, so severe as to cause two-thirds of the total mortality to be assigned to fever in the regiment. And it is worthy of particular mention, as indicating the impropriety of sending young unformed lads to this country as recruits from England, that the average age of the subjects of these fatal cases was only 20 years and 6 months.

Diet.—Although the dietary of the British soldier in this country has frequently engaged the anxious attention of Government during the last few years, and has undergone much improvement by the introduction into it of a pound of fresh vegetables, as well as by the allowance of an increased quantity of sugar, yet I regret to have to state that the meat supplied to the troops at this station, from the beginning of April to the end of August, was generally of inferior quality and deficient in sustaining power, owing to the want of grass for cattle, and that the supply of vegetables was, for a great part of the same period, to a great extent limited to onions and pumpkins, the latter of which, being considered by the men of little use as an article of food, was sometimes looked upon with aversion, and often left uneaten, either from distaste, or from fear of its producing diarrhœa.

To the defects in the rations here noticed I attributed in part the feeble, exsanguined appearance presented by a large proportion of the men during the last few months, as also, in a certain degree, the low asthenic symptoms observed in some cases of fever, and I thought it proper to recommend that four ounces of dholl, one of the pulses rich in nitrogen, should be issued twice a-week to the European troops at the station as a substitute for the ration of rice. I may add, that this was the only suggestion available under the circumstances, for it was found impossible to supply meat of a better description, and all the exertion of the Brigadier commanding failed to procure other kinds of vegetables, as potatoes, turnips, carrots, sweet potatoes, &c. Happily, it was, however, immediately acted upon, and since the 1st of September the soldier has enjoyed, and used with advantage, as pea-soup, currie, puddings, &c., this valuable and too much neglected article of food, which has at once the rare merit of compensating for the nitrogen deficient in the meat, and adding variety to the vegetable element of the diet.

Barrack Accommodation.—I have already adverted to the imperfect hygiènic conditions, resulting from the construction of the barracks in parallel lines on so small a space of ground, and the inconvenience and crowding caused by the buildings in rear of the barracks, as also the close proximity of the officers' compounds; and it is painful now to have to observe that these defects are not only of a serious nature in their sanitary relations, but that they might have been easily avoided, in the original plan or disposition of the lines, by throwing back the site of the hospital to a position on the plain, 200 yards more in rear, and marking off the space, covered by the officers' compounds, at a distance 100 yards further from the buildings referred to. With respect to the barracks, it appears, as before stated, that they are intended to accommodate about 800 men; but I find, on estimating the cubic space, that, in order to assign each soldier 700 cubic feet of air, it becomes necessary to admit the whole height of the barrack-wall as an element into the calculation. Now, I believe that 1,000 feet, exclusive of the space inclosed by verandahs, should represent the accommodation of the soldier in this country, and this without taking into account more than 12 feet of altitude of the barracks; and I think it important to remark, that it would be more in accordance with the practice of civil or private life, and with the requirements of sanitary science, were it found possible to construct barracks of a size which would not afford accommodation, under one roof, to more than twenty-five, or at most fifty men.

But apart from the defects of accommodation, inseparable from the arrangement or construction of the barracks, and the assigned allotment of cubic space in them, now referred to, I have to state that some amount of overcrowding was necessarily incurred in the period embraced between the middle of May and the beginning of August, from the fact that the strength of the regiment, exclusive of men in hospital, married men, and men on duty, amounted to 900. In the early part of the year, several of the companies were detached on field-service, and the available space became ample in every respect; and after the month of August a new patcherie was handed over to one of the companies, while still more recently the pressure on the accommodation was relieved by a reduction of strength, consequent on volunteering, casualties, and the discharge of time-expired men. During the period now mentioned, however, the inconvenience of overcrowding was experienced by the regiment, and yet it was not possible to detach men to Aboo, as there were no barracks to receive them at that place; nor did the heat of the weather at that season of the year permit the suggestion of putting the soldier under canvas; it remained, therefore, only to propose that three tents should be pitched in rear of each barrack for occupation at night; and, if I have no very ill effects to record as results of the limited accommodation at this time, the gratifying circumstance may perhaps be referred, in part, to the *fact* that the suggestion was adopted, and the barracks thus relieved from overcrowding at night, when cases of apoplexy and of cerebral congestion are especially liable to occur.

It is only necessary to mention, further, that the number of men in hospital often exceeded 100, and that some overcrowding was the unavoidable consequence; for, as the hospital accommodation is designed for 60 patients only, it became necessary to occupy the verandahs as well as the wards; whether any injury was caused, by this pressure, cannot be either positively asserted or denied; but the fact itself gave me much anxiety. It is possible that the too close aggregation of the sick thus produced may have impressed a grave type upon some cases of disease, more particularly of fever; if so, it may be presumed that this untoward result must have been rendered much more unfrequent by the means adopted to prevent it, for care was taken not only that the space available was evenly distributed, but tents were pitched in the hospital compound, in which the numbers in excess of the hospital accommodation were provided with shelter at night.

In every military station of this country, it may be assumed that there is a tendency, during the rainy season, to the growth of luxuriant vegetation, whether as grass, weeds, or hedges, &c., and there can be no doubt that the subsequent drying up, or rather rotting of such vegetation, is often a prolific source of malaria, or other noxious exhalations, during the dry weather which prevails in the latter half of September and the months of October and November. Hitherto there has been a considerable exemption from fever of an intermittent type, and the regiment at this station and the troops have enjoyed great immunity from dysentery, while instances of remittant fever have not been of common occurrence, and were confined for the most part to the recruits as a class. It cannot therefore be said that disease of any kind has indicated any close connection with the sanitary state of the regimental lines. Still I may mention that, having considered it a matter of paramount importance to restrict within the smallest possible limits the action of all local influences thus likely to be developed to the prejudice of the regiment by this process of growth and decomposition, I thought it necessary to bring the state of the camp, in relation to it, under the notice of the officer commanding the station, with a view to have such growths cleared away and kept in check, a course which was promptly adopted.

The want of exercise, and the monotony of a soldier's life in times of peace, have long been familiar to the Medical Officer as causes of disease, and the fact has been put forward with due emphasis and, it may be added, with proportionate effect, in the Report of the Sanitary Commission. It is in India, however, that the baleful effects of an indolent, inactive mode of living are most conspicuously observed, indeed, *cæteris paribus*, it would not be difficult to prove, that the measure of health, which an Englishman enjoys in this country, is in direct relation to the amount of active exertion which he has to undergo. Indigo planters, Officers of the Civil Service, men in the pursuit of business, these are the classes among whom the healthy portion of the community in India must be sought; the soldier, on the other hand, has no object of sufficient interest to compel him to take much exercise, and few resources or amusements to tempt him out of doors; he yields to the seductions of an enervating, exhausting climate, acquires sedentary and too often dissipated habits, deteriorates in physical and intellectual endowments, from want of employment, both bodily and mental, contracts disease readily, possesses neither the muscular nor nervous energy to carry him through it, nor that vigour and perfection of the functions which might enable him to eliminate it, or throw it off. It is no uncommon thing to see men who had been drooping, weak, and anæmic in barracks, when ordered on field service, or the line of march, rapidly acquire renewed strength, energy, and spirits; men now voracious in appetite, who were previously unable to make use of their daily rations. Nor are the instances by any means unfrequent, in which patients admitted into hospital, and confined to their beds, for the treatment of various local affections, contract disease of the liver, dyspepsia, &c., from the absence of exercise alone, and in so aggravated a form as to render their removal to England, for change of climate, unavoidable.

In the presence of facts such as these, we must regard the soldier's life in this country as, in its very nature, a pregnant source of disease, but I have to add, with pleasure, that the fact has been fully appreciated by the officers of the regiment. Skittle grounds have been constructed for the use of the men, and quoits and draft boards supplied to each company, at the expense of the canteen fund; and the officers have entered upon a voluntary monthly subscription to encourage amusements amongst the soldiers, and to induce them to leave their barracks in pursuit of health and recreation.

Observ

Maximu			Temperature of Dew Point.						Rain.	
			9½ A.M.			3½ P.M.			Inches.	
Greatest maximum of month.	Mean	Minimum.	Maximum.	Mean.	Minimum.	Maximum.	Mean.	Minimum.	During the nonth.	Maximum in 24 hours.
86 ·30	7	·338	60 ·50	50 ·50	34 ·80	62 ·60	51 ·80	42 ·2	0 ·20	0 ·20
90 ·5	8	·278	63 ·10	53 ·00	40 ·20	59 ·60	53 ·50	41 ·2	..	..
102 ·40	9	·206	70 ·40	59 ·20	47 ·90	64 ·20	58 ·70	53 ·0	..	..
110 ·00	1	·247	72 ·30	62 ·70	50 ·60	71 ·60	62 ·50	51 ·9	..	..
111 ·00	1	·357	74 ·30	69 ·90	63 ·30	71 ·10	69 ·00	67 ·0	..	..
107 ·30	1	·324	76 ·60	72 ·00	68 ·50	77 ·60	71 ·20	66 0	2 ·13	1 ·35
102 ·00		·479	79 ·80	75 ·90	73 ·20	80 ·70	77 ·10	72 ·5	15 ·76	3 ·58
91 ·60		609	76 ·20	73 ·80	68 ·40	80 ·10	15 ·60	12 2	0 ·27	1 ·22
101 ·20		·417	77 ·80	73 ·60	69 ·80	77 ·50	74 ·20	70 ·5	5 ·99	3 ·18
96 ·2		·322	73 ·80	65 ·50	57 ·20	74 ·10	64 ·90	57 ·1	..	..
93 ·30		·327	61 ·60	55 ·80	48 ·60	62 ·00	56 ·80	51 ·7	..	..
86 ·00		·378	59 ·10	52 ·30	40 ·00	61 ·30	55 ·20	46 7	..	..

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, Surgeon, H. M.'s 33rd Regiment.

TOPOGRAPHICAL AND DESCRIPTIVE ACCOUNT OF MOUNT ABOO, THE STATION, BARRACKS AND HOSPITAL.

BY J. OGILVY, Esq., M.D., *Assistant-Surgeon*, *33rd Regiment*.

1. *Geographical.*—Mount Aboo, which may be called the Sanitarium of Guzerat and Rajpootana, is a large isolated mountain in the territory of the Rao of Serohī, in the province of Rajpootana.

It is situated in latitude 24° 40′ N., and in longitude 72° 56′ E.

It lies a few miles to the S.W. of the Aravelli Range, from which it appears to be distinct.

It is forty-five miles distant, in a N.E. direction, from the military cantonment of Deesa.

It is distant from—

Calcutta ..	..	about	1,000	miles.
Bombay ..	..	„	400	„
Agra ..	..	„	400	„
Lahore ..	..	„	550	„
Hydrabad	(Scinde)	„	300	„
Ahmedabad	..	„	120	„

2. *Historical.*—Aboo is a place of great antiquity and sanctity, but, before the year 1806, had no place in our map of India.

The famous temples of Aboo have been the chief source of its historical fame. Temples are said to have existed here in remote ages, dedicated to Siva and Vishnu. On the traditional site of these places of worship now stand the far-famed temples of Dilwara. They belong to a sect of Hindoo Deists called Jains, and were built 1,000 years ago, at the expense of Bimul Sah, a merchant of the sect, who dedicated them to the gods Richabdes and Nemminath.

They are built almost entirely of marble, and are said to have cost 19,000,000*l.* sterling.

Their internal decorations are of the most elaborate, varied, and gorgeous description.

They still attract the devout from many parts of India.

An equestrian statue of Bimul Sah attests the gratitude of the Jains to the munificent founder.

Colonel Tod, Governor-General's Agent for the Western Provinces, was the first European who visited the hill of

Aboo. He reached the highest summit in 1822, with considerable difficulty.

The results of his observations are given in his *Travels in Western India* (page 73).

Between 1824 and 1832 the only European who visited Aboo regularly was the Political Superintendent of Serohi, who built a small house in the vicinity of what is now the station, and usually spent the summer months in the comparatively cool atmosphere of the hill.

About the year 1836 the Joudhpoor Legion was formed, and, by the year 1842, most of the officers of the Legion had taken advantage of the nearness of Aboo, and built houses for themselves there.

About 1840 a few invalid soldiers, from Deesa, were sent up to Aboo, for the sake of their health, and were encamped there for the hot months, returning to the plains before the rains set in.

In 1843, Major Anderson, the Political Superintendent, procured from the Serohi Rao the present barrack valley where the troops are stationed, and handed it over to the military authorities.

The two hospital buildings (now pulled down) were first erected, and, subsequently, two barrack buildings, all of perishable construction, but in some respects suitable for occupation during the fair weather months.

These erections appear to have been put up on the recommendation of Colonel Sutherland, in 1847, who placed on record his opinion of the adaptability of the hill to the purposes of a sanitarium throughout the *whole* year.

Since that time, troops have been kept at Aboo almost without intermission, during all the seasons of the year, and with the best results.

General Description.—Mount Aboo, at its base, is about 13 miles long, 11 miles broad, and 50 in circumference.

It rises rather abruptly from the wild sandy plain around, nd the ascent is, consequently, long, winding and steep.

The top of the hill is extensive, and very irregular, consisting of peaks, ridges, valleys, sloping plateaus, and wide basins.

The highest peak is called Goru Sicker, and is 5,700 feet above the level of the sea.

The average height of the present station is about 4,000 feet above the sea.

There are other peaks of lower elevation, one of the principal of which is called Achilghur. On it a fine marble temple, of the same name, is picturesquely placed.

The general effect of the hill landscape is pleasing, especially to a visitor from the far stretching and parched up plains below. The bold and often grotesquely shaped rocks blend agreeably with the vigorous shrubs and herbage.

Clear streams of water flow along the low grounds, and give freshness and a picturesque appearance to them.

In the rains, the mountain streamlets, meeting in the deeper glens, find exit through narrow gorges, and rush down their steep, rocky channels, in fine cascades, into the plains below.

Aboo was formerly more wooded than it is now. There are still, however, some very fine trees on different parts of the hill, and its sides are covered with a thick, jungly vegetation.

There are several lakes or collections of water on the hill, the chief of which, called the Nukkee Talao, is on the west side, lying romantically between the western ridges of Aboo and the station. It must originally have been a small natural tank, probably formed by volcanic agency, but, by the erection of a bund or wall, and other artificial means, it has assumed its present appearance and dimensions.

It is now about 1,000 yards long, and about half as broad. Its greatest depth is probably under 40 feet. It is a rather stagnant piece of water, and the side of it which is adjacent to the station is generally shallow and marshy. It is an unfortunate circumstance that the prevailing wind should be from the south-west, as it thus generally passes over the lake before reaching the station. Its level varies according to the season of the year. Between the end of the hot weather, and the termination of the rains, there is a rise of from 5 to 7 feet.

Skirting the north end of it, and close to its shore, is the main road, which runs in an easterly direction to the barracks and station, and in a westerly direction to what are called the Aboo Gates.

At this latter point, which is merely an opening between two high pieces of rock, commences the winding downward road, the main communication with the plains below.

Only the station and its vicinity are furnished with roads, which are merely broad *paths*, repaired, for the most part, at the expense of the residents. They wind through the station, and branch off in different directions, affording opportunities for healthful exercise on foot or horseback, and trips to interesting points in the surrounding neighbourhood.

Animal Products, &c.—At some seasons feathered game is to be found in the marshy hollows and lakes, and, all through the year, the sambur deer may be tracked within a short distance of the station.

There are few villages on the hill from which sheep or bullocks are not occasionally carried off by a tiger or panther, and the peculiar roar of the bear, and the bark of the hyæna, may occasionally be heard on the jungly hill sides of Aboo.

Snakes of different kinds are common enough, and, in the wet weather, frogs swarm.

The lake contains several kinds of fish, some of which are tolerably good for eating.

The fresh-water crab abounds in some of the larger streams.

Sheep and poultry are reared by the people to a limited extent, and with varying success.

The grass is not well fitted for the fattening of sheep, and, consequently, those seen on the hill have generally been brought up from the plains, and stall-fed on gram, for the butcher.

A sturdy breed of oxen is met with on Aboo. They are kept for agricultural purposes and supplying milk, and are never eaten or allowed to be killed on the hill through Hindoo prejudice.

Geological Formations.—Aboo is almost entirely composed of granite. Distinct veins of quartz are common, and trap, greenstone, and other rocks are occasionally met with. Fine specimens of rock crystal are sometimes picked up. The amygdaloidal texture may be observed in some of the rocks. All the various stages of decay of the granitic rocks may be traced.

About five miles, in a southerly direction from Gurusicker, there is a marble quarry, at the foot of the hill, from which the marble for the famous temples was procured. It was brought up the hill by an ancient, and still partially existing road, on its south-eastern aspect.

This road may again, possibly, be made useful, in the event of the station or camp of Aboo being removed to the plateau of Coria, as will be afterwards noticed.

Villages.—There are twelve villages on Aboo, exclusive of the collections of houses which have sprung up in the vicinity of the station. Two of these are now deserted.

Inhabitants.—The aborigines of the hill appear to have been Bheels. They appear to have been overcome some 1,500 years ago by marauding Rajpoots from the plains, who seized their arable land, and intermarried with the subjugated owners. A mixed race has thus sprung up, disowned by the Rajpoot caste, and living apart from the few pure Bheels who still are to be found on the hill. This mixed race is now in possession of almost all the land under cultivation. The Hindoo population probably exceeds 1,000, exclusive of the varying retinues of political agents and residents.

Religions and Castes.—The castes are chiefly Jains, Rajpoots, Coolies, Bheels, and Loke.

The Mussulmen now found on Aboo are followers of the Rajpootana agency, pensioners, &c.

Cultivation.—Cultivation is naturally limited, and confined generally to the low strips of valley land in the vicinity of the villages, and where irrigation is possible and easy.

Vegetable Productions.—The only crops are wheat and barley in the cold weather, and, in the rains, Indian corn, moong, and a few species of cucumbers and gourds.

Some enterprising gardeners also grow *potatoes* and European vegetables, which thrive well at this elevation.

The *tea* plant, some years ago, was for a time cultivated with success, but, unfortunately, there is now no trace of this promising experiment.

Mangoes are plentiful, but of an inferior quality.

Plantains thrive, but the fruit does not come to perfection.

The *karoonda* plant (the cavissa karoonda) grows wild, and is plentiful and vigorous. An excellent and wholesome jelly is made from the berries.

The *jessamine* is very abundant.

The *oleander*, the *willow*, and the *dog-rose* are also indigenous.

The nectarine and peach are cultivated in the gardens, but the fruit of the latter only comes to perfection.

The sacred Champa tree grows at Dilwara to an extraordinary size, and the delightful fragrance and umbrageous beauty of this magnificent tree are very striking. Most English flowers are cultivated in the gardens with success, and some of the older residents have surrounded their bungalows with gardens of great beauty.

Soil.—The soil is porous, and generally easily drained. It is composed chiefly of the different kinds of clay and gravel, the products of granitic decomposition.

A sort of strong, high grass springs up in tufts most luxuriantly wherever there is dampness or moisture, and its presence is a pretty sure sign of the necessity of draining the ground on which it grows. It retains moisture amongst its roots and stalks, and is a cause, as well as a result, of the dampness of particular spots of ground. It grows vigorously near the barracks, and all around the barrack valley. In walking through it the air has a sensibly raw and chilling feel, and the change to a rocky part of the path is striking.

In some parts of the hill two crops are raised yearly.

Wild flowers are abundant, and honey is a favourite food among the villagers. The bees'-wax is also a profitable product.

The Seasons.—The seasons do not much differ in time from those usually experienced in the plains.

The hot weather, if indeed it can be called hot, commences about the middle of April, and terminates with the rains, which are variable in the time of their accession, but usually commence with thunderstorms about the middle of June.

The rains cease as they begin, with thunderstorms, about the middle of September, after which, for a few weeks, an occasional shower falls.

A short interval of warm weather during October and part of November, follows the monsoon ; and, at the end of November, the cold weather has set in, and continues from this time until April, when the weather gradually becomes warmer.

The highest temperature ever known in Aboo in the shade is 98° Fahrenheit ; and the lowest to which it has fallen is 28° Fahrenheit. This gives an *extreme* thermometrical range of 70°.

The usual extreme of summer heat, however, very seldom exceeds 90° ; and the cold of the winter months seldom falls below 40° Fahrenheit. This gives the ordinary range of the thermometer at about 50°.

The following comparison holds with Deesa :—

	Usual extreme of Summer Heat in shade.	Usual extreme of Winter Cold in shade.	Average Daily Temperature through the year in shade.	Maximum Temperature in Sun's rays.	Usual range of Thermometer.
Deesa	110°	40°	74·1	140·7	70°
Aboo	90°	40°	69·9	112·9	50°

The thermometric figures are better shown in the

Meteorological Table in Appendix, than they can be described here.

At no season can the climate of Aboo be said to be disagreeable.

During the warm months of April, May, and June, the weather is most delightful; the mornings and evenings cool and invigorating, the temperature in the middle of the day in the shade, always bearable, and the nights cool, and well-fitted for refreshing sleep.

Kus-kus tatties are unknown; and punkahs are only used by the more luxurious. The temperature of the warm months averages 77° Fahrenheit. The Deesa average summer heat is 90° Fahrenheit.

The difference between the power of the direct rays of the sun at each place, is striking (see Table No. I, page).

The soldiers in the warm months are generally very healthy, and have plenty of out-door exercise and amusement.

At hill stations, as a general rule, the monsoon season is a very disagreeable one, and residents often retreat to the plains before it sets in.

It is also unusual to retain soldiers on the hills during the wet weather. It is therefore of much interest and value to know the results at Aboo, where soldiers are kept during the whole monsoon. It is certainly not an agreeable season to them, because, as will be afterwards fully entered into, their barracks here are badly situated, and hitherto have been unfitted, by their temporary construction, for a monsoon residence. But notwithstanding these drawbacks, the men are very healthy, generally, during this foggy, drizzling weather.

In the table land of the Deccan, the monsoon season is mild, genial, and healthy, and there is little inducement to send invalids or others to the hill stations. But in Guzerat the monsoon is a close, oppressive, and unhealthy season. The temperature at Deesa, for instance, averages 89° in the rains; whereas, in the same season at Aboo, the average is about 70°. The climate of the Mount during this time is soft and pleasant, but there are the drawbacks, of course, of fog, drizzle, and wet. It bears a very favorable comparison with the reeking and unhealthy rain-time in Deesa. In the monsoon of 1859, the Hospital of Her Majesty's 33rd at the latter station was filled, and many deaths took place. The soldiers at Aboo, half of whom were invalids or weakly men, were at this time wonderfully healthy, and no death occurred.

There is in the monsoon season at Aboo considerable humidity in the air; and exposed furniture and other articles become rapidly covered with mould. From 55 to 60 inches of rain is the usual annual fall at Aboo. The average for the *last* 5 *years*, however, has been 69·29 inches, which is unusually high. The usual annual fall contrasts favorably with other hill stations, &c., as compared in the following Table:—

Station.	Average Annual Fall of Rain in inches.
At Aboo	55
„ Mahabuleshwar	254·0
„ Poorundhur	72·2

There are some days of the monsoon very foggy, and to an extent not often met with in the plains. There is also now and then a penetrating driving mist, which it requires a particular construction of building to resist and exclude. This foggy, drizzling weather, however, is relieved by occasional comparatively fine days, and never lasts longer than four or five days at a time.

The Autumnal or 2nd Hot Season.—After the rains, the clouds gradually disappear, and the now diminishing, but still powerful sun heat, reappears for a time. This season lasts from the cessation of the rains in the beginning of September to the middle of November, when the cold sets in.

This is a pleasant time at Aboo, and visitors run up to escape the warmth and unhealthy exhalations of an October in the plains.

Unhealthy Season at Aboo, and the cause.—But strange to say, the above among the soldiers is the unhealthy time of the year. The natives, who live from choice on the low ground, and the soldiers who, from necessity, live in the barrack *valley*, suffer from fever and ague, while fever among the residents and visitors is a thing unknown.

A good deal of dampness prevails in the hollows at this time, and the misty morning clouds may be seen floating over the low grounds and valleys up to a late hour. The long marshy grass, before described, is generally at this season bedewed with moisture, which is retained amongst its roots and tufts.

It is conceived the military hospital statistics of this season would be very much altered by a change in the position of the barracks to high and healthy ground, of which there is plenty.

Cold Season.—The cold weather is extremely healthy and bracing. The temperature averages about 60° Fahrenheit; and on one occasion in 1855, fell as low as 28 Fahrenheit (Table No. II.) Hoar frost often covers the ground in the morning before sunrise; and some years ago ice used to be made and stored, the expense and trouble, however, attending its collection were so great, that it is not now attempted.

The admissions into Hospital reach their minimum in this season.

Sites for a Station and Sanitarium.—In the selection of a European station at Aboo, the present site was naturally fixed on, on account of its pleasing position on the banks of the lake, the adaptability of the undulating ground to the purposes of building and gardens, and the convenient nearness to the Deesa road, and to the chief objects of interest on the hill. An explorer would certainly fix on it as one of two desirable positions to be found on Aboo, for the purposes of a station.

The other tract of ground, which presents advantages in some points over the present, is at some distance from the station.

It is a large piece of table-land, called *Oovia,* and it is situated on the western aspect and at the foot of the high peak of Gurusicker. It lies nearly east from the present station, and is about five miles distant. It is also 500 feet higher, and would afford room for the hutting and exercising of 3,000 or 4,000 men. Undulating bungalow and garden ground is plentiful. A certain amount of drainage would be necessary on its south side. The ascent to it at present is steep and difficult, but a good road could easily be made. It might also be approached by a ghāt-road on the southern slope, a road which was originally made many hundred years ago, for the purpose of transporting the marble from the quarry at the foot of the hill to the temples: this road has fallen into disrepair.

In a few years, when it comes to be seen that the hill stations are the natural and proper residence (when practicable) of Europeans in this country, it may well be imagined that motives both of humanity and of financial economy may induce the Government to form an extensive depôt or depôt brigade of troops, and especially of young or recently arrived soldiers, at Aboo, for the supply of the surrounding stations. In that case the plateau or table land of Oovia may be used with advantage, and the position more minutely studied.

With such a prospect, Aboo would be less isolated, and its invigorating climate made easily available, if railway communications were laid down between it and the different surrounding stations. There are no great obstacles to this in the nature of the surrounding country.

The troops concentrated at Aboo could thus be made available for immediate removal to the plains in case of sudden need, and a considerable amount of life and expense saved.

The expense attending the invaliding and discharging of broken down soldiers from Guzerat and Rajpootana, now so great, would, it is conceived, be most materially lessened.

The present road from Deesa to Aboo is little more than a cart track over the sand, always heavy, and in the rains very difficult of passage. It is a dreary journey, but in dry weather, with good carriage, may be hurried over in a night. It is a military march of four or five days. At the Indian rate of railway speed, it would be a trip by rail of two hours and a half.

About two miles from the foot of the hill, is the little village of Anadra, where troops and visitors halt, and procure coolie carriage and chairs for the ascent.

The road from the foot of the hill upwards is narrow, steep, and winding.

A good carriage road might be made up the hill without much difficulty.

The top of the hill is reached at what is called the "Aboo Gates," which are merely two prominent perpendicular rocks, with a passage between them. Two hundred yards after passing this point, the lake comes in view, and immediately afterwards the station.

The Station.—The station of Mount Aboo is situated in the lower basin formed by the northern and western ridges of the hill on two sides, and the smaller peaks and detached ridges on the south and east.

It is about 4,000 feet above the sea, and the ridges around rise 400 or 500 feet higher, one or two to nearly 1,000 feet.

The basin may be said to be three miles and a-half long, and two miles broad; irregular in outline, and communicating by several gorges with the plains below.

There is, perhaps, a difference of 150 feet in the elevation of the highest and lowest bungalow in the station.

The bungalows are generally built on rising ground. All the best sites near the lake are crowned with houses.

The depressions and valleys are usually avoided, as in some seasons they are damp, and the mists linger over them. The only exception to this preference for high ground is in the case of the barracks. There are about twenty bungalows belonging to, or rented by visitors.

A small, airy, well-built (pucka) church stands about the centre of the station, and, a few yards behind it, the "Aboo Lawrence School," occupies a gently rising ground.

The Deesa chaplain makes a visit about once a month, when the roads are practicable.

There is a large bazaar, near the church, on low ground, which presents no features of interest; and there is a smaller one attached to the Sanatorium, and within the military limits.

Supplies.—Almost all supplies come from below, on the heads of coolies and the backs of donkeys, and are retailed in the bazaars at advanced prices.

There are generally from 250 to 300 Europeans on the hill, including soldiers and school children.

There is a prettily situated cemetery, within a mile of the church. The road that winds past it is continued in a westerly direction about another mile, and ends in a favorite lounge, called "Sunset Point," from which the Deesa plain is well seen. The highest house in the place is called the "Vakeel's house." It is picturesquely perched on the pinnacle of a high conical rock on the west side of the lake, and looks down on the station over the intervening water.

Schools.—There is no native school at Aboo. The late Sir Henry Lawrence, in the spirit of true philanthropy for which he was so eminently distinguished, conceived the idea of establishing a school at Aboo, for the reception and education of European children; chiefly those of soldiers. This institution has already proved an incalculable blessing to many children, who would otherwise have been exposed to the deadly influence of a residence in the plains. It is supported chiefly by subscription, the founder having set a noble example of liberality. The number of children now exceeds sixty, and their healthy appearance is the subject of remark by all visitors.

The boys are provided with situations in the Civil, Staff, and subordinate Medical Departments, and the girls are trained to useful avocations for wives and members of society.

General Remarks on Hill Stations.—From experiment and observation, it appears that considerable judgment is necessary in adapting and timing the benefits of hill sanitaria to European soldiers and invalids.

It cannot be truly affirmed that the effect of the descent from a hill station into the plains is similar to an arrival in India from England.

There is a certain acclimatization secured by a hill residence on first arrival, which becomes a notable advantage.

Certainly, as far as experience yet extends, the effect of removing an old, service-worn regiment to the hills is by no means desirable, as visceral congestions are almost sure to occur in a proportion of the men. It is in the case of freshly-arrived drafts and young recruits that benefit is to be looked for; and a careful selection from amongst sickly men and convalescents will always be benefited. This is found at Aboo, and stations similarly situated.

Suffice it to remark, generally, on hill stations, that they seem admirably adapted for the *acclimatization* of European troops, for the quartering of *newly-arrived drafts* and *regiments*, for the *strengthening* and *training* of *recruits* and *young soldiers under the age of* 22; for the recovery of *convalescents* and soldiers *weakened* by *certain forms* of disease, and in a *striking* degree for the *rearing* of *European children.*

In a financial point of view, such a quartering of European troops would be a gain; fewer invalids would have to return to England, consequently fewer drafts from home would be necessary, and transport, recruiting, and other expenses would be lessened.

The Sanitarium proper.—The hill station of Aboo occupies a favourable position among Indian sanitaria. Its position is central for Guzerat and Rajpootana; its climate is agreeable and salubrious throughout almost the whole year; there are no hot winds; the rain-fall does not equal that of the Island of Bombay; the place is not blocked up with snow as in some other sanitaria during the cold weather; there are facilities for making good roads up and on the hill; the soil is porous, and easily drained; the water is good and sufficient; English fruits and vegetables grow vigorously, and there are facilities for boating, shooting, cricketing, &c., seldom combined in one station.

The Aboo climate appears well-adapted to the European constitution. Children thrive well, and have an English colour and firmness of muscle.

Recruits and young soldiers, sent up drooping and weakly from the debilitating effects of the Deesa heat, soon put on flesh and colour.

The effect of the heat on young soldiers is well-marked in the Guzerat plains. Deesa statistics of health are very favourable on paper, but the men, though not actually suffering from disease, after a time become pale and cachectic-looking, faint, and unequal to much exertion of any kind.

By a residence at Aboo for a year or two, on arrival, they would become acclimatized, and might be paraded and drilled morning and evening without fear of overworking or distressing them. As comparatively strong and drilled soldiers, they could then be sent to do duty in the plains, to make way for the freshly-arrived drafts. This object of acclimatizing and preparing recruits and young soldiers should be considered as of infinite importance, and to be kept in view in extending the usefulness of Aboo as a sanitarium.

Invalids.—As a sanatorium for invalids, the Aboo climate, *at certain times of the year*, is well-adapted for a *certain selection* of cases.

For *all cases*, the most beneficial season for a change to Aboo is that of the hot weather.

The monsoon weather, being cool and mild, is also adapted to many cases that droop and sink in the hot monsoon of the plains.

The winter months, from December to March, are very healthy to most men, but should be avoided by those suffering from any organic visceral disease, lung-affection, syphilitic or rheumatic weakness.

It is difficult to say how great an improvement would appear in the statistics of disease at Aboo, especially during October and November, if the soldiers' barracks were removed to a high and healthy site; but, judging from the residents and Laurence School children, fever would probably almost disappear; and, at this transition-season, almost all the admissions are under that head.

The following forms of disease do *not* appear to receive positive benefit, with occasional exceptions:—

1. *Rheumatism*, in its acute and chronic forms, receives but little benefit, except for a limited time in April, May, and June. The cachexy, in such cases, may be somewhat altered for the better if it is not syphilitic.

2. *Secondary syphilitic complaints* receive little benefit, especially in the rains and cold weather, which seasons may be found positively prejudicial.

3. *Hepatic complaints*, acute or chronic, do not benefit. In the hot months slight benefit might accrue to the general health, and sleep be possible at Aboo which cannot be procured below. Men quite convalescent from

hepatic disease may benefit in the warm months, and, possibly, in the monsoon.

4. *Pulmonary complaints* are commonly aggravated on the hill, although the weak phthisical patient may at some stages be strengthened by the change.

5. The climate is inimical to *Heart* disease.

On the other hand, patients suffering from the following diseases generally derive benefit from the change to Aboo:

1. *Intermittent Fever.*—Here the effect of change is very striking. The paroxyms abate in frequency and strength, and the patients put on flesh and colour.

From 1st November to 15th December no fever cases should be sent to Aboo, but rather be returned to the plains, so long as the present barracks are inhabited. When they are removed this season will, probably, be no exception to the general rule throughout the year.

2. *Dyspepsia, idiopathic,* is generally much benefited.

3. Chronic and obstinate *ophthalmia, ulcers,* and *discharges,* receive marked benefit by the change.

4. *Diarrhœa* and *Dysentery* are benefited in different degrees. Diarrhœa much. Dysentery in a less degree, but still perceptibly. Dysentery arising on the hill is quite as amenable to treatment as in the plains, and convalescence usually more rapid.

In general debility, and slow and lingering convalescence, a change to Aboo in the hot weather, or even the monsoon, is likely to be of much benefit.

Hill *diarrhœa* is unusual at Aboo, except at the beginning of the rains.

Cholera, small pox, and other epidemics are almost never heard of.

Barrack Accommodation.—At this date (December, 1859) there are two barracks at Aboo, made to accommodate 120 men, and a patchery, occupied temporarily as a hospital, and calculated for about forty patients. In all, there is room for 160 men; but they are not well accommodated. They are not so well housed as most troops in the plains. They are living in the lowest and most unhealthy site that could be chosen, and it is a sanitarium where half the men are invalids.

The two barrack huts are placed in a valley, near the north end of the lake. This valley is the channel by which, in the monsoon, a large quantity of the rain that falls on the surrounding hills finds its way to the lake, and at most seasons a small stream runs down its centre. Commencing at the north end of the lake, a marshy prolongation of which runs up it for a little way, the valley is continued in an easterly direction for about half a mile, when it turns off to the north-east, and, narrowing much, opens at last on the Dilwara basin.

The barrack valley is about 550 yards long, and at its broadest part, namely, where the barracks are built, it is about 100 yards broad. It is flanked on both sides by hills, which, on the north side, rise to a height of about 300 feet, and, on the south side, to a height of about 150 feet.

This southern range cuts off and hides it from the rest of the station.

The place where the barracks are built is only a very few feet above the level of the lake. The Barrack No. 1 is 350 yards from the lake, and the other is some yards still further up the valley. They are both built nearly parallel with the length of the valley, and run almost east and west.

All breeze nearly is excluded from them, except the westerly, which, entering the valley at its junction with the lake, is guided along by the flanking hills, through its whole extent.

This wind is generally cold and moist, and brings with it the disagreeable lake smell, which has often been complained of by the men.

The soil of the valley is naturally soft and marshy, and requires a good deal of drainage to keep it dry. Until very lately, and after being strongly represented, the drainage was superficial and imperfect, but it is now vastly improved.

The soil thrown up from the trenches in deepening the drains was particularly remarked to be quite wet and heavy, even although the earth is of a porous character. But it is natural, in so great a depression, that the water should filter down into it, from the higher levels, and lodge.

In the cold months, probably, as the effect of exhalation from this ground, the valley air is cold and raw up to a late hour in the morning, while the higher ground is warmed by the early rays of the sun.

This site, the barrack valley, has been occupied since 1843 by soldiers, encamped or hutted.

The two old hospital buildings, and the two first built barracks, are now removed. Two new barracks have been erected, but no hospital. There is at present no hospital proper. A patchery, intended for twelve families from Deesa, is temporarily used to contain the sick.

Many attempts have been made by the medical officers in charge of the Sanitarium to have the barracks and hospital removed to another part of the station, but the mutiny of 1857-58 interfered with arrangements that were then being made for their removal.

In September, 1859, after repeated representations from the Commandant of Aboo, a Committee was appointed to consider what new buildings were advisable to replace the condemned ones, and to select a convenient and healthy site on which they should be erected.

One piece of ground has invariably been selected, as pre-eminently suitable and desirable in every sense.

It is a moderately extensive plateau, about the same distance from the church as the present site. It is called *Gundummuck.*

It lies in a south-easterly direction from the present barracks, about three-quarters of a mile distant.

It is higher than any occupied site in the station. The approach to it is excellent; the immediate fall from it on all sides secures dryness and successful drainage; there is facility for well-sinking round about the place; there is no hill or intervening object to shut out the breeze from all sides; there is an excellent airy height at one end for the hospital, and sloping ground to leeward for cook-houses, latrines, and houses for native servants.

The present two barrack-buildings are situated in the centre, or broadest part of the valley, and are 182 yards apart.

They are long tiled huts, of wattle and dab, and, as the building used for hospital purposes, are so defective in all sanitary points, as to material of which built, system of construction, and means of ventilation, &c., that details of the kind, as to such temporary buildings, would be superfluous.

Garrison.—Aboo is garrisoned by 80 soldiers, and there are usually from 40 to 80 invalids and weakly men in addition to these.

Duties.—The duties of the little garrison are very light. There is a barrack and hospital guard, a duty occupying eleven men daily. The men have from eight to twelve nights in bed, generally.

Rations.—There is some sameness in the diet, no beef being procurable.

Each man has one pound of fresh mutton daily, and every third Wednesday one pound of salt pork is issued instead.

The men have their meat cooked according to their own liking.

Each has one pound of good bread and one-third of a pound of onions daily; and four ounces of rice, with salt, tea, and sugar, in usual and sufficient quantity. Other vegetables, such as pumpkin and sweet potatoes, are issued when they can be procured.

The men have two tea-meals; one at 8 A.M., and the other at 4½ P.M., and they dine at 1 P.M.

Out of 150 men, who have been at Aboo for the past seven months, the average number who drink their daily quart of porter has been 72, while the arrack-drinkers have averaged 42. On the whole, a little more than half the liquor ration has been consumed.

Suggestions.—The points which ought chiefly to be attended to in making the soldiers comfortable, and restoring the invalids to strength, thus developing the climatic benefits of Aboo, may be summed up in the form of a few suggestions:—

1. That the barracks and hospital, and other buildings, should be constructed on a high, dry, and healthy site.

There is no site so unobjectionable as Gundummuck, and the present site is defective in every sanitary respect.

2. That they be built of pucka *well-burned* bricks and lime, instead of the present wattle and dab arrangement, which is saturated and damp in wet weather.

3. That the floors be *always* paved with large well-burned bricks, pointed with chunam.

4. That the hospital ward should not be very broad, but lofty.

5. That the verandahs should be broad and spacious, and, on the windward, or both sides, adapted with glass windows and doors to admit of any amount of airing or draught required, and also of complete protection against excess of breeze or mist.

6. That the buildings should be elevated on a strong stone foundation, at least four feet above the ground.

7. That the system of overlapping roof-ventilation be always adopted.

8. That the admission of light be an object always kept in view, and a large number of doors and windows inserted.

9. That a large convenient bath-room, chunamed and sloped, be provided, containing in one corner a fixed boiler to supply hot water when required.

10. That a convenient and commodious drying-room be built near the barrack, in which, in the wet weather, by means of cross ropes or bamboos, and several stoves, the wet or damp clothes, or bedding of the men, could be expeditiously dried, without affecting the air of the barrack-room.

11. That a good-sized, comfortable room, with a fireplace, be built for the men to lounge, read, or amuse themselves in, especially in the bad weather, when they cannot go out. Here the newspapers, books, draught-boards, &c., might be supplied.

12. That a *complete* and *thorough* system of deep-drainage be invariably carried out all around the barracks and hospital.

13. That the system of soldiers' gardens be carried out practically, and European tools and seeds supplied to them. In this way, fruit and vegetables might often be procured, and with profit to the diligent gardener.

14. That latrine-soil and offal be removed to a considerable distance, and made subservient to the gardening, &c.

15. That the cases for removal to Aboo, as invalids, be carefully selected by the Medical Officers, according to the established experience of hill climates; and that, *as a general rule,* the commencement of the hot season be preferred for the transfer.

16. That dry, well-paved roads be made between the different buildings in the camp.

					Mean.										General Mean.	
	1858.		1859.		1855.		1856.		1857.		1858.		1859.			
t.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry.	Wet.	Dry	Wet.
·5	..	..	..	..	56 0	..	62·4	54 3	54	..	47	..	61	..	56·0	..
·4	..	..	..	..	61·9	..	63·9	54·3	67·5	..	53	..	64	..	62·0	54·0
·2	..	..	..	..	70·7	60 6	74·2	65·2	69	..	45	..	61	..	63·9	62·9
·9	..	..	..	..	70·9	61·0	80·7	68·5	71	..	..	..	76·5	..	74·7	64·7
·3	..	..	..	..	80·2	67 2	82·0	68·4	77·5	..	..	..	77 5	..	79·3	67·8
	..	..	..	..	76 0	70·0	76 5	70·4	77·5	..	..	..	80	..	77·5	70·2
·6	..	..	..	..	69·3	68·2	71·3	69·3	73·5	..	69	..	77	..	72·0	68·7
	..	..	..	..	67 9	65·5	67·7	66·4	72	..	63	..	71	..	68·3	65·9
·0	..	..	..	..	68·0	66·7	68·0	65·1	71	..	68	..	70	..	69 0	65·9
·5	..	..	..	..	72·5	63·0	..	..	72·5	..	70·5	..	70	..	71·8	63·0
	..	..	..	..	68·6	60·2	..	..	..	..	66·5	..	69	..	67·5	60·2
	..	..	..	..	62·3	54·3	..	..	49	..	62	..	..	..	57·7	53

				Rain.									
	1859.			1855.		1856.		1857.		1858.		1859.	
Mean.	Max.	Min.	Mean.	Amount in Inches.	No. of Rainy Days.	Amount in Inches.	No. of Rainy Days.	Amount in Inches.	No. of Rainy Days.	Amount in Inches.	No. of Rainy Days.	Amount in Inches.	No. of Rainy Days.
..	..	..	..	1·00	1	..	..	2·48	5	·5	1	..	..
91	..	..	..	..	..	..	..	1·10	1	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..	..	..	..
..	..	..	..	0·48	2	0·91	1	..	..	..	..	·11	1
..	..	..	..	..	..	..	..	1·40	1	..	..	·20	1
..	..	..	..	3·81	8	2·21	8	15 27	8	2·32	2	8·31	9
83	..	..	..	52·01	28	24·10	24	6·84	16	46·21	26	24·6	10
83	..	..	..	2·58	14	35·71	31	23·84	20	6·18	20	16·14	9
71	..	..	..	9·90	18	6·62	9	20·15	20	6·77	11	6·36	11
..	..	..	..	..	..	..	..	·34	3	..	..	..	..
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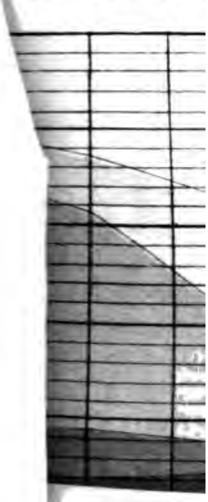

AND SANITARY REPORT ON UMBALLA AND ITS VICINITY, UPPER INDIA.

KENDALL, *Surgeon, H. M.'s 7th Hussars.*

ments are situated in the district of Umballa,
y division of Sirhind, an extensive territo-
of Hindoostan, bordered on the north by the
e east by Sirmoor and other Hill States, and by
districts of Saharunpore, Paniput, and Rohtuk,
by Rohtuk and Hurreeana, and on the west by
Bahawulpore.

ut 220 miles in length, from east to west, and
h, and lies between latitude 29° 3′ and 31° 24′ N.,
50′ and 77° 39′ E. The superficial extent is
ut 17,000 square miles. Sirhind, in nearly its
t, is a level plain, except where the surface, at
st, rises into the lower ranges of the Himalayas.
ll extent of elevated surface terminates, at the
ontier, in a low range, which stretches seventy-
a north-east direction, from near the left bank
j, a little above Ropur, to the right bank of the
e to its efflux from the Dehra Doon. This range,
y, extends from about latitude 30° 22′, longitude
titude 31° 2′, longitude 76° 40′. It is the lowest
hill tract described by Dr. Royle in the following
The low range of hills, frequently separated from
alayas by diluvial valleys, or doons, such as that
ldom attains an elevation of more than 3,500
0 feet above the plains of Northern India." The
ses across this range were 2,339 feet, and 2,935
hey were cut down.

in, which forms the rest of Sirhind, slopes very
om north-east to north-west, and is unbroken,
pressions swept by water-courses, or by sand hills,
the more barren tract, which extends over the
joins the territory of Bahawulpore and that of

ars ago a survey was made, by order of Govern-
line of levels taken, for ascertaining the practi-

cability of connecting the Sutlej and Jumna, by canal, at the points on those great rivers where the downward navigation commences for vessels of any considerable burthen. The south-eastern extremity of the line contemplated is on the right bank of the Jumna, six miles east of Kurnaul, at an elevation of about 1,000 feet above the sea; and it held a course, in a direct way, nearly due north-west, to Loodiana, on the left bank of a navigable channel of the Sutlej. This line, 112 miles long, crosses all the water-courses flowing from the Himalayas, and, probably, traverses the roughest part of the country. The inequalities result either from ridges rising to small elevation above the average level of the country, or from shallow valleys, apparently formed by the numerous streams.

The country, however, in proceeding westward, has a general and gradual rise, which attains its maximum elevation, 67 feet, at Kuddoo, ninety miles from the Jumna, whence, in twenty-two miles, it falls to the Sutlej, the level of which is two feet lower than that of the Jumna. Thus, the whole of Sirhind may be regarded as a low ridge, rising between the Jumna and the Sutlej, as the bed of every water-course between these two rivers is invariably several feet higher than that of either.

The country between the Jumna and the Sutlej is traversed by a dozen considerable torrents; of these, the principal are the Sursooty, the Markanda, the Clagur or Cuggur, the Putteeala Nullah, and the Khan-Poorkee Nuddee. These torrents generally communicate with each other during the season of inundation. On this subject a recent accurate observer says: "From near Thanesur to Konaheree, the whole tract of country (with the exception of village sites) is liable to inundation from the sub-Himalaya torrents diffused over its surface by means of a net-work of natural and artificial water-courses, of which some are supplied from more than one of the rivers above-named; others, again, flow from one river into another, and during great floods (as I was given to understand) all three are frequently united."

The British possessions in the cis-Sutlej Sikh territory have been divided into four districts—Ferozepore, Loodiana, Umballa, and Ky Thul. The aggregate revenue is between 18 and 19 lacs of rupees.

Sirhind, situated between the Himalaya on the north and the desert of Bikanur on the south, has repeatedly been traversed by armies advancing to the invasion of India, and hence has been the scene of many conflicts, and other memorable events. As it was saved from the threatened invasion of Alexander by the mutiny of his troops, probably the first great military operation, recorded to have taken place on its soil, was the capture of Thanesur, in 1011, by Mahumed of Ghuznee. After the death of Mahumed, the Hindoos, in 1043, recovered possession of this place, and the rest of Sirhind. In 1191, Mahumed, the Affghan Prince of Ghor, attempting to recover the Mussulman conquests in Sirhind, received a severe defeat near Thanesur and fled to Ghuznee, but returned in the following year and, having on the same field routed a great Hindoo army, made himself master of the whole country, which continued subject to the Mussulmans until the Sikh outbreak. It escaped the horrors of the invasion of Tamerlane in 1397, as the route of that prince, in marching from Batwur, which he had laid in ruins, to Delhi, only touched the southern frontier; and, having proceeded to Cupeli, or Konpelah, to exterminate the Hindoos assembled there, he returned to Khorasan through the Sewalik mountains, by Jamoo and the southern boundary of Cashmere, probably crossing the Indus above Attok. In 1525, Baber, in his advance against Ibrahim, the Patan King of Delhi, overran and seized the greater part of Sirhind. In 1554, the vicinity of the town of Sirhind was the scene of an action, in which Humayon, the son of Baber, gained a decisive victory over the far more numerous army of his Patan rival, and gave peace to the Mogul Empire. Sirhind appears from that time to have tranquilly enjoyed the imperial favour until the outbreak of the Sikh insurrection.

Umballa is a British district of Sirhind, within the cis-Sutlej division of territory; its centre is in latitude 30° 23′ N., longitude 76° 44′ E.; its area is stated at 1,832 square miles, and its population as amounting to 782,017. It is one of those possessions which, previously held by a Sikh Sirdar, was escheated to the East India Company in default of rightful heirs. This district was seized by Runjeet Singh during one of his marauding expeditions to the left of the Sutlej, and that aggression occasioned, in 1809, the movement of British troops, which resulted in the conclusion of a treaty with Runjeet, by which he was required to withdraw his army from the left bank of the Sutlej, and relinquish his recent conquests in Sirhind. The town of Umballa is the chief place of the district and lies on the route from Kurnaul to Loodiana, fifty-five miles north of the former, and sixty-nine south-east of the latter. It is a large walled town, situate in a level and highly cultivated country, well provided with water, and capable of furnishing abundant supplies. The houses are built of burnt brick, but the streets are, in general, so narrow as scarcely to admit the passage of an elephant. The population of the town is given at 21,962.

There is a fort at the north-east end of the town, and under its walls the old encamping ground of the British troops is situated.

The height of the town above the sea is 1,040 feet; distance from Calcutta, north-west, by Lucknow, Delhi, and Kurnaul, 1,020 miles; latitude 30° 24′, longitude 76° 49′.

The soil of the district is loamy (called "rouslee"), over the whole of which, at one time, and perhaps for many years, rivers have traced their course, leaving their valuable deposits of decomposed vegetable and mineral matter to fertilize the soil. As the deposits have become deeper, the beds of old rivers have been choked up; the water, forced over the surrounding country, has made a new channel for itself, until, after a time, that has again been filled up, and deserted for another course. There is hardly a village over which, in very abundant rains, like those of 1852, the water has not flowed in a sheet. It is from the moisture inherent in the land, from the above causes, that sugar and the best crops grow, without artificial irrigation.

There is no jungle worth noticing. Most hardy trees thrive in the alluvial soil. The produce of the land is of a very fair average.

The land is ill suited for wells; the depth to water varies from 7 to 60 feet, and the depth of water from 2 inches to 16 feet. None of the wells have springs in them. In the hot weather there is difficulty in getting water fit to drink. On account of quick-sands, it is continually altering its courses, so that a well, giving an abundant supply one year, may be perfectly dry the next.

The Játs are the principal cultivators, the others are Rajpoots and mixed classes. The Cantonment of Umballa gives employment to great numbers of the villagers living around.

The Cantonment was laid out in 1843, and comprised 15,871,13 beeghas (9,920 acres of land); it lies to the east of the town about six miles, and between thirty and forty miles south of the Simla Hills, and is about equidistant from, and connecting, the two European stations of Meerut and Ferozepore. It runs north and south, and faces the west, with the exception of its right termination, which faces north, the lines for one regiment being thrown back. Within its boundaries is inclosed a large tract of open wild country, extending for a mile in all directions, and almost entirely free from cultivation. It is regularly laid out, being intersected in all directions by wide roads, running parallel to each other. The right of the station is well wooded, having some fine topes of old mango trees, and the country generally is better wooded than the left of the line, the soil of which is sandy; in fact, the ground occupied by the European Cavalry and European and Native Infantry was, at the formation of the cantonment, an arid sandy plain. There are now fine trees in the gardens and along the sides of the thoroughfares, but they are of recent date, and not yet to be compared, in luxuriance of foliage or growth, to those on the right.

On account of the want of material for road-making, all the roads, with the exception of the principle ones, consist of nothing but the soil smoothed down, consequently, in wet seasons, they are almost impassable, and, in hot seasons, cause considerable inconvenience and annoyance by the quantities of loose dust accumulated on their surface.

The Grand Trunk Road runs through the station, and is made up of "kunka," a composition of lime, said by geologists to have been the formation of insects (similar to the coral) when the whole level surface of India was covered by the sea. This kunka is brought some ten miles, and is, thus, rendered expensive. All the "pucka," main, or permanent roads, are made of it, excepting the "Mall,"—this is formed of broken bricks, the refuse of the kilns, and which is very durable.

The soil is generally a rich and productive alluvial, of some depth, and partakes of an argillaceous character, resting on beds of sand, of greater or less depth, and shifting (quicksands).

Some parts of the Cantonment, the left especially, are very badly off indeed for water, depending entirely on what is obtained from wells; these, from the nature of the sand beds, are continually failing, and the residents are thus put to considerable inconvenience. The right flank is very much better circumstanced, the wells affording a continual supply. The cavalry are particularly fortunate in this respect, for, in addition to seven wells in their lines, there is an aqueduct running along the whole front of the bungalows, and having a reservoir opposite to each, which affords an unlimited supply. The source of this was discovered, a short time since, only a few feet from the surface, and too much praise cannot be accorded the authorities, for it was immediately made available for the use of the troops; thus rendering this station (the cavalry portion of it), before so much in want of water, one of the very best in Upper India in this respect.

The climate of Umballa is hot; in 1838, the thermometer reached 112° in the shade at noon, and, in January of the same year, it at no time fell lower than 33°. During the six months of 1859 the 7th Hussars have been at the station, the thermometer has ranged between 108° and 62° in the shade at noon, these being the highest and lowest numbers of degrees.

The rains usually begin about the second week in June, and last until the end of September; they are in some years very heavy, flooding the whole of the adjacent country. In 1852, the rains lasted for some days in succession, and the whole Cantonment was under water to the depth of two feet. Many of the bungalows, being built on the ground, and not raised on "chaboutras," had one or two feet of water in them. The rains during the present year, 1859, have been light; the heaviest fall was on the 28th September, on which date the measuremeut was $2\frac{5}{20}$ inches. In seasons of drought, the inhabitants suffer a good deal, as the wells afford an insufficient supply, and there are no large streams within several miles; the nearest river is five miles off. The rains are usually accompanied by severe storms of thunder and lightning, and are frequently preceded by dust storms, of great density, which may be seen coming for a considerable time before their effects are felt. The blast which announces their approach is hot and suffocating, and of sufficient force, at times, to unroof bungalows and uproot the largest trees. As soon as the storm is passed over, doors and windows are thrown open, in order that none of the cool, refreshing breeze, which usually follows, may be lost. After the hot and close days of this season, this breeze is especially grateful, and duly appreciated by man and animals. There are occasional slight shocks of earthquake experienced.

Umballa stands below the medium rank of healthiness, among our stations for European troops. The station has gained a bad character for cholera outbreaks, which appear to be in great measure attributable to the inundations to which the neighbourhood is liable. There are, however, reasons for believing that its unhealthiness is partly owing to the faulty condition of some of the barracks. In the Medical Board's report for 1852–3, it is noticed that the medical officers, who had reported upon the recent epidemic of cholera at Umballa, remarked that this disease and fever appeared to run their course together, and that both were attributed to malaria consequent on the inundation of the country. The cholera epidemic was, however, almost confined to the barracks of the European soldiers, whereas the natives, and the station generally, suffered chiefly from fever. It was observed that "the symptoms of nearly all the fever cases, treated in hospital at the above period, bore a resemblance to those of cholera." It has been remarked that the somewhat high rate of mortality at Umballa (during the eleven years ending 1854–5) appeared to have been nearly confined to the infantry; and a principal medical authority, for several years resident at the station, observed that, in successive seasons, when the men of the artillery were exceedingly healthy, much sickness prevailed and many deaths occurred among the infantry; a result, apparently, from the circumstance that the barracks of the latter are built on a different plan, occupy a less desirable site, and admit of less perfect drainage than those of the cavalry and horse and foot artillery.

Nullahs run around and through the station, and water is thus carried off. There is a gradual slope in front of the barrack of the Cavalry towards the west and, thus, the rain is quickly carried away. Numerous ditches, running in all directions, through the lines, carry the water to large nullahs situated to the east. Great attention is requisite to keep these ditches free, as vegetation is abundant, and foreign matters quickly accumulate, and choke them up; they ought to be thoroughly cleansed about May or June, immediately previous to the accession of the rainy season.

The duties in this station are light; they consist of the ordinary barrack-guards, chiefly, during the hot season; and, during the colder months, the more frequent drills, field-days, and other military evolutions are carried on.

During the hot weather the usual out-door amusements of soldiers cannot be followed; but, from the month of October to the end of March, the men can attend to their respective tastes without any detriment to health, and the various games of cricket, of the ball-court, &c., can be practised.

If gymnastic exercises, and the usual manly sports of Englishmen, were more encouraged, in fact, made a part of the soldier's drill, much good of a hygiènic nature would result at a station of this kind, like those of India generally, where sameness produces so much of tedium in his daily course of ordinary life.

If Government would give prizes annually, or oftener, or hold out some chance of distinction to the best performers in the gymnastic drills, much good would result, especially in this country, where the soldier is too apt to become indolent and apathetic. The duties ought to be made attractive, and this can only be done by the soldier knowing, that, if he excel in any one thing, it will be noted to his advantage. Many men may be excellent swordsmen, first-class manêge riders, or superior shots, and yet not be fit for promotion on account of want of education. In consequence of this, many lose all desire for their drills, or even stimulus to exertion or emulation. If a medal or badge could be instituted, and allowed to be worn by the best man at each of the military exercises, a spirit of pride and emulation would be induced, which might make the men better soldiers, and more interested in their duties.

The daily rations of the men consist of bread, meat, rice vegetables, and tea. These, being always of good quality, contain sufficient nutritive properties to keep even the strongest man in health; but the part in the service least considered as yet in India is the cooking, the same old routine plan is still adhered to, viz., stewing, and the means of roasting, baking, or other variety, are not yet afforded. The robust and hardy can mostly eat and digest anything, and derive nourishment from it, but the weakly soldier, in very many cases, loathes the food thus cooked, and, unless he buys luxuries out of the balance of his pay, has to go without; this tells upon his health, and he soon becomes an inmate of the hospital. If some improved cooking apparatus or ranges were adopted, and issued for use of regiments in cantonments or barracks in India, and a proper culinary staff attached, much good would be effected. Anything, or everything, which tends to raise the health of the British soldier, especially in India, where his intrinsic cost to the State is so great, ought to be adopted. The amount saved to the country annually would be great, and the morale and efficiency of the troops would be raised.

Opographical Report on the District and Station of Ghazeepore, North-West Province, Bengal.

By J. W. FLEMING, F.R.C.S., *Surgeon, 37th Regiment.*

The now well-known, and oft-described, district of hazeepore is situated in an Upper or North-Western rovince of Bengal, and derives its name from the chief wn standing upon the banks of the Ganges. By reference a map of this portion of India, it will be found to be ounded on the north-west and north by the district of zimghur, also a military station; on the north-east by the ow important Gogra; on the south-east by Shahabad, and artly by Benares; on the west by the districts of Jounpore nd Benares respectively.

It lies between latitude 25° 17′—26° N.; longitude 83° 8′—4° 40′ E.; and may be said to be about 96 miles in length om east to west, and 40 in breadth.

The principal rivers which intersect and flow through the istrict are the "mighty Ganges"; the Gogra, rendered omewhat familiar by the recent military operations along s course; the Karamnassa, of some size; Tons-Bisu, and e Manghi; the first three, however, being the most mportant.

Generally, the country may be said to slope gently from oth sides of the Ganges, probably in the degree of seven or ght inches in a mile, from north-west to south-east. As in lmost all other parts of the province the face of the ountry is flat, and interspersed with but very few trifling levations; jheels or shallow lakes, nullahs or small water-ourses, and patches of swamp, are common. The greatest levation of the waterway of the Ganges—towards the western xtremity of the district where it is highest—is about 260 feet, nd, in consequence of the extremely flat and undeviating ature of the ground, it probably nowhere exceeds 350 feet bove the level of the sea.

The population may be considered as amounting to nearly ne million and a-half, of all castes and creeds, engaged hiefly in agricultural pursuits. For the most part, the natives are poor, and their habitations partake of a like character, being built of mud, in some few cases covered with tiles, but commonly with grass or mat thatch.

The cultivation of maize, rice, indigo, wheat, barley, small quantities of cotton, tobacco, and the poppy, is much attended to; and the sugar-cane grown in the north-west is generally much valued for its superior quality.

The roads throughout the district, available for military use, amount to five, all of which are generally in a state of good repair, with the material for so doing close at hand. They lead to Azimghur, Benares, Gorruckpore, &c.

The principal town, named Ghazeepore, "or City of True Believers," is situated on the left bank of the Ganges, at a distance north-west from Calcutta of 598 miles by water, and 431 by land; north-east from Benares, by water, 71 miles, and 46 by land; east from Allahabad, by water, 210, by land, 120; from the "Grand Trunk Road," on the opposite side of the river, about 28 miles, and to which there is easy access by a good road. It also forms a coaling station for the numerous steamers employed on the Ganges, all of which stop at this place, in proceeding both up and down the river. The city itself is by no means striking in appearance, and many parts are in ruins. It is, however, well kept, and its streets and lanes are, upon the whole, remarkably clean.

The inhabitants amount to nearly 40,000 persons employed in various trades of minor importance; mercantile pursuits, chiefly in cotton goods, and as exporters of grain and other local products. The houses are for the most part composed of mud, or mud-bricks, have tiled roofs, and possess but little convenience; a few are, however, substantially built, particularly towards the river frontage.

The natives, though paying much attention to the cleanliness of their persons, are yet remarkably indifferent to the removal of stagnant accumulations of water, and other noxious matters, too often a common source of malaria and disease, from the effects of which they at times suffer considerably.

With reference to the important subjects of geology, mineralogy, and botany, my remarks need not be lengthy, because these have been ably discussed by such men as Roxburgh, Wallick, and others, to whose works I would beg to refer for further information.

The climate of this station may, with truth, be stated to be highly salubrious, and, as far as my Indian experience extends, no place can be found in Lower India better adapted for the residence of Europeans, and for soldiers in particular. The aspect possesses a cheerfulness far beyond what I have elsewhere seen, and at once strikes visitors from other stations, especially from the upper provinces. "Ghazeepore," it has been observed, "is celebrated throughout India for the wholesomeness of its air, which may, in a great measure, be ascribed to the natural advantages of its position; from the elevated level on which it stands, and the dryness of its soil, which never retains the moisture, and after the heaviest showers, is, in a few hours, fit to walk on with comfort." It has, moreover, "a noble reach of the river to the south-west, from which quarter the hot winds generally blow."

The soil, being soft and porous, with here and there strata of calcareous conglomerate, must of necessity help to lessen the moisture of the air during the monsoon, and this may, in some degree, tend to render the jheels, and marshy portions of the district, less productive of disease than might be expected from a soil of opposite character.

The range of the barometer is but trifling, whilst that of the thermometer is more extensive, for, during the "cold season," commencing about the middle of October, and ending in March, it is noticed to be from 46° or 48° to 71° and 75°; in April, 86° to 96°; May, 86° to 98°; June, 85° to 98°; July, 86° to 96°; and even 110° or 120° in the shade, as I have not unfrequently seen it, particularly in the month of May, which is considered the hottest month of the year; and January, with a mean temperature of 56°, is the coldest.

Here, as elsewhere, in the North-West Provinces, the seasons are "the hot," "rainy," and "the cold." The first may be considered to commence about the beginning of April, increasing in heat during May, June, and the half of July; after which month that of the "rainy" is expected, continuing with little intermission till the middle of October, when the "cold season" begins.

The fall of rain amounts to about 25 inches in the twelve months; on this point, however, I am not very certain, having no pluviometer. The amount of dew is often very considerable, and frequently continues upon the ground till 11 A.M. before it disappears.

The heat of the sun, during the months of May, June, and July, is excessive; and the amount of radiation must be very great. I regret the state of my instruments has prevented accurate observation on this point.

The periodic rising of the Ganges commences about the end of June, and soon overflows its banks, leaving everywhere a rich alluvial deposit as it subsides, prolific alike to animal and vegetable life.

Ghazeepore, during the season, comes within range of the "hot winds," which, while they last, blow with the heat of a furnace, "causing the country to appear sterile, and burnt up, and, though the trees keep their foliage, the earth is stripped of all herbage, as if a flood of lava had flowed over it—drinking rivers dry." Yet, with all the inconveniences, and they are *not* slight, of these winds, troops in cantonment, and Europeans generally, are, upon the whole, more healthy than in the cooler season of the rains which succeed them.

The climate of Ghazeepore may be considered from the 15th of October to the middle of April to be unsurpassed by any region in the world.

Of native fruits, grapes, peaches, custard apples, guava, pine apples, oranges, pummaloes, plantains, mangoes, water melons, and many others abound.

Of English esculent vegetables, the cold season readily produces potatoes, carrots, cauliflowers, turnips, peas, beans, beatroot, raddish, cucumber, cabbage, and others that might be mentioned.

The bazaars are for the most part well supplied with beef, mutton, poultry, fish, and many kinds of game, as wild duck, snipe, &c.

During the smarter frosts of December and January, ice is produced by the exposure of water, to the depth of an inch, in shallow vessels or plates, but this luxury has not as yet been stored at this station in sufficient quantity to be available for general and hospital use. The experiment, however, is being tried at present, and with apparently greater success than heretofore.

Of the diseases met with at this station, it may be noticed that, during January, February and March, the comparatively cold and dry weather, remittent, intermittent and ephemeral fevers of a very mild description occur; and, occasionally, from careless exposure at night, diarrhœa and colic are induced. In April, May, June, and July, when the greatest degree of heat is felt, the various forms of the above fevers increase, the more "continued" frequently assuming the character of the "ardent fever" of Indian authors. Dysentery, complicated often with hepatic derangement, occasionally severe in type, cholera, and intestinal affections, are met with among the Europeans and natives, alike, at this season.

In August, September, and October, the most common cause of admission into hospital is the ordinary bilious remittent fever of the country, and trifling diarrhœa. During November and December, unless "the rains" have continued far into October, sickness decreases, and but slight ailments of a general character prevail. If, however, the rains have been late in terminating, much sickness continues, chiefly in in the form of hepatic derangements, and ague, with enlargement of the spleen.

Unfortunately, as at all other Indian stations, syphilis, in every variety of form and severity, is the cause of a very large percentage of admissions, and too often permanent disability. There is no building at present devoted to the treatment of native females affected with this disease, though formerly a good Government lock hospital existed within the Cantonment.

Ophthalmia is occasionally met with during the hotter months, when clouds of fine dust blow over the place, but it cannot be said to be by any means a common complaint.

Hepatitis, with or without the dysenteric complication, does not appear to be of such frequent occurrence as at many other stations. The chronic form is, however, somewhat difficult of removal, without, in the majority of instances, a total change of climate. In old soldiers, and hard drinkers, hepatic abscess is remarkably insidious in its appearance and progress, being often fatal; though by no means uniformly so, especially in the younger men, for I have witnessed some remarkable recoveries from this serious disease during my residence at the station.

Epidemics of cholera have occasionally visited this station, and in no way, as far as is known, differed in their commencement, increase of fatality, decrease of severity and disappearance, from those occurring everywhere else.

Small-pox rarely appears among the Europeans, though it is but too common and fatal with the native population. To prevent this, the liberality of Government, and zealous exertions of its officers, are doing much to spread the blessings of vaccination, and it is hoped each year will increase its prophylactic influence, notwithstanding the obstacles of caste-feeling, class-interests, and various social and religious prejudices.

The Cantonment, within the area of which stand the the various military buildings about to be described, is situated about two miles from, and at the south-west end of the town, and immediately on the margin of the left bank of the river. In the intervening space are placed the gardens, houses, and other buildings occupied by the civil servants of the Government, the native jail, the extensive opium factory, the court-house, treasury, &c. The cantonment and its vicinity are beautifully wooded, the roads good and well laid out, so as to give a pleasing and extensive diversity of walk for exercise and recreation.

Before proceeding to give a description of the buildings now used as barracks, hospital, &c., I may mention, that, though Ghazeepore, but a few years ago, possessed what has been called "magnificent accommodation" for a full European regiment of infantry, and a portion of cavalry, at present only four of the buildings exist: viz., a barrack-room, one of eight such, for a regimental company of foot; the old cavalry hospital, now used as a stud granary; that of part of the old regimental hospital, now employed for the safe custody of materials belonging to the Engineer Department, and than which locality probably a finer site for a hospital does not exist in any station in Lower Bengal; having an aspect and view that must ever have acted with the very greatest benefit on the sick soldier; and, lastly, the square block of building known as the old Commissariat Godown, and still occupied as such. For reasons which I have not been able clearly to ascertain, the European troops were withdrawn in 1847, and what must have been most complete (for the foundations are still traceable), though not altogether desirable, military barracks for Europeans, were soon after pulled down and the materials sold; the few residents with difficulty succeeded in saving the racket and fives' courts from demolition. Since then the station has been garrisoned by a regiment or wing of native infantry, until the outbreak of the late mutiny, when it was, in May, 1857, re-occupied by detachments of the Madras Fusiliers, 78th Highlanders, and at present solely by Her Majesty's 37th Regiment. Soon after the arrival of European troops, the native regiment, 65th Bengal Native Infantry, was withdrawn and sent to China; and there is now no detachment of native troops, unless, indeed, the new "police levy" can be considered such. This corps, however, does not occupy quarters within the military cantonment, for, being chiefly under the civil magistrate, the men are placed in "native lines" nearer the town, and upwards of a mile and a half from the European barracks.

Of the officers' bungalows, but lately in ruins, a few have been repaired, and thus rendered habitable, but the number required for accommodation of the full complement of regimental and staff officers is still deficient; the native owners being unwilling to go to any great expense in the re-erection of old bungalows, or the addition of new ones, owing to the uncertainty of the continuance of white troops at the station.

The detachments, which arrived here during the early part of 1857, were located, with tolerable comfort, in the large opium factory, near the native town, and on the edge of the river, but, as the numbers increased, other buildings had to be prepared for their reception and, accordingly, six ranges of the Government stud stables were speedily prepared for, and are now occupied by the 37th Regiment. To these have been added tolerably substantial, but somewhat faulty, buildings, although strictly according, I believe, to "the sanctioned standard," for the married men, staff serjeants, prevô, guard-room, increased hospital accommodation, &c.

Within the cantonment are also the Protestant and Roman Catholic churches, both large and handsome structures, and close to the barracks.

The bazaar attached to the cantonment is large, and occupied by natives who supply the European residents with almost everything needed in the way of ordinary wants.

Like all other stations occupied by Europeans, the facilities for procuring intoxicating drinks are common enough, notwithstanding the stringent police regulations of both civil and military authorities. The native liquors here, as elsewhere, are mixed with highly deleterious, and sometimes even poisonous, ingredients; but being cheap, and readily intoxicating, they are too often sought after, and as easily obtained.

The buildings occupied as barracks consist of six ranges of old stud stables, placed near the centre of the cantonment, arranged parallel to each other, with their length running north-west and south-east. They are exceedingly low, and have but one, or ground-story, with which the floor is on a level. They are built for the most part of brick and mud; the roofs are tiled, and a verandah, also with a tiled covering, runs round the building.

The floors are of hard kunkar-brick and stone flags. Those of the verandah are entirely of the same hard calcareous composition.

The ventilation is promoted by a succession of openings along the roof, and by the numerous wide doorways.

There is a shallow drain cut around each building, for the purpose of catching the rain falling from the roofs, and carrying off surface-water.

To each barrack-room there is a detached bath-room and latrine, but these are only "temporary" structures; a covered way leads from the main building to each of these out-offices.

The water, always good and abundant in quantity, is procured from wells in close proximity to the barracks, and never requires straining, or other means of purification, beyond the regular cleaning out of the wells, which the natives so well understand.

There are three large cook-houses, commodious, and built entirely of brick, with tiled roofs; their interiors are fitted up as best suits the simplicity of native cooking.

The cells are placed at the northern extremity of the ranges of barracks, and intended to contain eight prisoners. They are built of hard and, partially, of mud-bricks, have tiled roofs and dry flag floors; they have a bath-room and latrine attached, and ventilation of the whole of these erections is increased by openings along the roofs. These, together with the regimental guard-room, school-house, and other buildings, are all built according to the standard plan sanctioned by Government.

The Hospital is the only portion remaining of the old Ghazeepore barracks, and is calculated for the reception of 100 patients. It stands at the south-west corner of the ranges of barracks, and not very far distant; its greatest length is from north to south.

Of all the available buildings, it was found to be the best, and, for want of a better, it answers all general purposes tolerably well, but is, of course, very deficient in the chief requirements of a hospital in this country.

It is built entirely of solid brick, and is raised about a foot and a-half from the ground; an inner verandah runs along each side, and it has an outer one at each end.

The flooring is entirely of hard stone flags, which are dry and easily kept clean.

The roof is high in the centre, but slopes to a low degree of elevation at the sides; it is covered with tiles, and along the ridge is a succession of raised openings for ventilation, which is likewise assisted by a very large number of Venetian doorways.

At each extremity of the building, and connected by a covered passage, are placed bath-rooms and latrines. The first have fixed wash-basins, and the latter are so arranged that the contents are removed with the greatest facility; they are of brick-flagged floors and have tiled roofs.

Around the building runs a drain of good size, and made of hard brick concrete, which appears admirably adapted for the purpose.

The water-supply is abundant, and is procured of good quality from adjoining wells.

The kitchen, washing, and dead-houses run due north and south. They are built of brick, and the roofs are tiled.

New hospital bungalows have recently been erected according to the "standard plan" of such buildings sanctioned by Government. They are built partly of hard and mud-bricks; the roofs are tiled.

These are called "merely temporary buildings for hospital accommodation," and it is well so to consider them, for no buildings could be more ill-adapted for the purposes of a hospital in a tropical climate.

Each building is intended to accommodate twenty-eight patients; there is a verandah extending along their two sides for the exercise of the convalescents.

The floors are of hard dry stone-flags, and are raised about 1½ feet from the surrounding ground.

At each end of this new range are situated a bath-room and latrine, both of which are approached by a covered way from the main building. These are well built, with tiled roofs, and are commodious and conveniently placed.

In the immediate neighbourhood of the hospital are placed the quarters of the Hospital Staff, as steward, apothecary, &c., to which there ought to be added one for the hospital serjeant.

Beyond the buildings just described, are situated two ranges of tolerably comfortable, though small, quarters for the married soldiers and their families. They consist of accommodation for thirty families, each having two rooms of unequal size. They are built of hard and mud-bricks, with tiled roofs; wide verandahs extend the whole length of their west front; the flooring is of hard dry stone-flag; good and separate wash-houses and latrines for the men and women are placed at each extremity, and there is a good cook-house in the centre of the rear.

The water for ablution, and general purposes is procured from a large well close by.

Of the general Sewerage there is very little to say, for none, properly so called, exists in this station, beyond the presence of a few shallow saucer-like drains around the various buildings, and along the sides of the roads, which help to convey the surface water to neighbouring tanks, or nullahs, and thence to the river.

The contents of the various latrines, attached to the barracks, hospital, and other buildings, are regularly removed twice a-day to a large tank about a mile and a-half to the rear. By the free use of charcoal and lime in the latrines themselves, and also in the conservancy carts, beneficial effects are ensured.

In conclusion, I may remark, that it becomes a matter of much importance to consider how far the chief causes of the diseases, fever and dysentery, most common to soldiers, are preventible at stations where they are located; and, as malaria is unquestionably the most prolific in inducing such attacks, it has been observed that—"The remedies, or rather "the weapons to be employed for the annihilation of Indian "fevers (also dysentery and other diseases having a malarious "origin) are, therefore, obvious enough. Whether this vegetable matter (and, it may be added, animal, too), in process "of metamorphosis and decay, under circumstances of high "temperature and moisture, be in the form of large accumulations spread over the surface of the ground, as is the "case after the middle and about the close of the rainy "season, or in the shape of marshes, exposed alluvial banks "of rivers, lakes and canals, or of cesspools, all of which near "the end of, and after the monsoon, teem with organic matter, "which, having subserved the purposes of vegetable and "animal life, is being rapidly brought under the influence of "chemical laws, it is capable of being rendered innocuous, "or of being destroyed: 1st, by effective drainage; 2ndly, by "proper cultivation, and the thorough reclamation of waste "and marsh lands; 3rdly, by the removal and destruction of "all decaying vegetable and animal matters, or by their "localization in some convenient spot, sufficiently far removed "from any human habitation; 4thly, by the levelling of all "hollow places or inequalities, which might be converted "into cesspools; 5thly, by the complete filling up of all fissures "existing in the earth, both in plains and ravines; 6thly, "by the embankment of rivers (and canals) in proximity to "our stations; 7thly, by carrying these sanitary measures "into execution, not only within, but, if possible, over an "area described by a radius of not less than from half a-mile "to two miles around every cantonment; and, lastly, by "planting a belt of lofty growing trees around the circumference of this protecting circle, for the purpose of impeding "the flight of, or retaining, or absorbing, the malaria wafted "towards the interior by prevailing winds."

REMARKS ON THE TOPOGRAPHY OF THE MILITARY STATIONS IN BRITISH GUIANA, INCLUDING DEMERARA AND BERBICE, WITH A BRIEF ACCOUNT OF THE COLONY, ITS PRODUCTIONS AND CAPABILITIES.

BY HENRY C. READE, ESQ., *Surgeon-Major.*

BRITISH Guiana is situated at the north-eastern extremity of South America. Its limits have been variously described, but I believe it is generally computed to contain about 76,000 square miles, comprising the counties of Demerara, Essiquibo, and Berbice. Guiana, according to most authors, was discovered in 1498 by Columbus, but the earliest evidence of a settlement in the colony is that in 1580, when some inhabitants of Zealand settled near the River Pomeroon.

In 1652, the English formed a settlement there; ten years afterwards the whole colony was bestowed by Charles II on Lord Willoughby, then Governor of Barbadoes, from whose heirs it was bought by the British Crown in 1667, and exchanged with the Dutch Government for New Holland (now New York). In 1711, the British took possession of all the Dutch West Indian colonies, when Demerara and Essiquibo were considered the richest prizes. In 1783, the colonies were restored to Holland, but were taken possession of by the French. In 1796, they were again taken by the British Government, under which they flourished, and commerce rapidly increased until their restoration, at the Peace of Amiens, in 1802, to the Batavian Republic, at which period there was an export of 20,000 hogsheads of sugar, and about 10,000,000 lbs. of coffee. In 1803, Demerara, Essiquibo, and Berbice again surrendered to the British forces; since which time they have continued in our possession.

In 1812, the courts of justice of the three colonies, Demerara, Essiquibo, and Berbice, were united, and the name Statrock changed to Georgetown, the capital of the colony. In 1831, they were united into one colony named British Guiana.

British Guiana is that part of South America extending from the mouth of the Corentyn river, in 56° 58′ west longitude, to Punta Barima, in 60° 6′ west longitude, having a coast-line of 280 miles, lying east and west, bounded on the north and east by the Atlantic Ocean, and extending from north to south about 450 miles, with an area of nearly 76,000 square miles.

It is essentially a low, swampy, flat country, covered with alluvial deposits from the surrounding mighty rivers, and extending inland from the coast from ten to twenty, and, in some places, forty miles, only a few feet above the level of the sea, while it is actually below it at high water and spring-tides; it is covered with a variety of rank weeds, and is wooded to the water's edge. The formation of artesian wells in various parts of the colony has shown that the low grounds consist of strata of blue clay and fine sand to a considerable depth, covered with a layer of rich vegetable mould several feet deep, favouring greatly the growth of the sugar-cane. The low lands are bounded by a range of sand-hills, about 120 feet above the level of the sea, and there can be no doubt that they have been formed by the detritus brought down by the great rivers, and deposited at their mouths. Beyond the sand-hills is a range of granite mountains of considerable elevation, running in a south-easterly direction, and considered the central ridge of the colony. Where these granite mountain ranges cross the rivers there are formed cataracts, picturesque in appearance, but offering obstacles to navigation.

A peculiar feature, and one worthy of mention, is the extent of the savannahs which are found between the Demerara and Corentyn rivers, occupying a space of about 14,400 square miles. Schomburgh is of opinion that "the region was once the bed of an inland lake, which broke its barrier, forcing for its waters a path to the Atlantic."

The rivers of British Guiana are four in number, the Essiquibo, Demerara, Berbice, and Corentyn, of which the Essiquibo is the largest, having a north-east direction. It has numerous tributaries, and in its course are several cataracts. Its length is supposed to be about 620 miles; its mouth forms an estuary 20 miles wide, studded with numerous islands, many being under cultivation.

Parallel to it is the Demerara river, navigable for about 75 miles from its mouth, which is nearly a mile-and-a-half wide. It has no important tributaries.

The Berbice, which lies about 75 miles east of the Demerara, is navigable for about 175 miles for small craft, the tide extending to nearly that distance.

The Corentyn, forming the boundary between British

Guiana and the Dutch possessions, has its source about 25 miles east of that of the Essiquibo river.

The climate of British Guiana is very equable; more temperate than other countries in the same latitude.

The following is the mean monthly temperature for one year, extracted from meteorological observations extending over eleven years in the colony:—

January	79·2
February	79·
March	79·8
April	80·6
May	80·7
June	79·8
July	79·3
August	79·
September	81·5
October	80·
November	80·3
December	79·

According to this table September is the hottest month, but evidencing very slight variation. There are two wet seasons and two dry, constituting the changes of season during the year. The long dry season commences about the end of August, and continues to the end of November. The short dry season commences in the middle of February, and terminates about the middle of April. The regularity of these seasons is, however, often interrupted. In the wet season the rain falls in very heavy showers, but there are frequent intervals of fine sunshine. According to Mr. Sandeman, the average annual rain-fall at Georgetown during seven years varied from 84 to 132 inches.

Except during the rainy season the prevailing wind is the regular trade wind, from the north and north-east. The land, or rainy, wind is westerly, but its continuance is of short duration, and during its prevalence there is usually much sickness.

There are occasional thunder-storms and high winds on changes of season, but hurricanes are unknown. The night is usually much cooler than the day, and the difference is necessarily greater the higher the elevation. When the heat of the air is the greatest, the temperature of the water in the rivers is the lowest, and near sunrise the water is much warmer than the air, at which time the judicious usually take their bath. The reputation in which British Guiana is held usually, from the supposed injurious influence of its climate to Europeans, is certainly not borne out by statistics. On referring to the casualties in the detachment of the 49th Regiment, averaging nearly 170 strong, during the last two years, no death from the effects of climate occurred nor has any man been invalided,—an immunity, I conceive, not to be found in any other British possession. As an evidence of the erroneous opinions of insalubrity of this station or colony, it has been proved that the duration of life in British Guiana is equal to that of any other country. Montgomery Martin, in his History of the West Indies, gives a comparison of mortality in Rutland (England) and Demerara, in favour of the latter, and indeed statistics corroborate the fact.

Residents appear to enjoy a remarkable immunity from many fatal diseases, such as consumption, influenza, and, until lately, cholera.

The unfavourable impression of the salubrity of this colony doubtless originated from the occasional prevalence of yellow fever in an epidemic form, but these visitations occur happily at long intervals. The first on record appeared in 1819, the next in 1837, and the last in 1856. Much of the virulence of the epidemic in 1837 was attributed to accumulated filth between the wharfs, extending along Water Street, where, from their peculiarily faulty construction, offensive matters were detained. This defect has now been remedied, and a free current of water is permitted to flow between them. In almost all cases of epidemic fever, its virulence and localization can be generally traced to such causes.

The prevailing diseases are dysenteric affections and periodic fever of miasmatic origin, in the treatment of which latter, especially, large doses of quinine and calomel are of essential service.

All the settlements of the colony are situated either on the coast or on the banks of the rivers; and, for their protection from the incursions of the sea, as well as for the purpose of drainage, a number of dams and navigable canals intersect the colony, while, in the cultivated lands, there are embankments on every side, having sluices giving vent to the surface drainage. Some idea of the amount of drainage may be formed by the fact of there being "in the city of Georgetown, besides private drains, thirty-one miles of open trenches, varying in width from two to ten feet, communicating by sixty-two tunnels."

The grandeur, luxuriance, and variety of the vegetation and never failing verdure, in this colony, are not to be equalled by that of any other country, fostered as they are by the genial temperature, humid climate, and rich soil.

The natural productions are diversified and extensive, increased by the introductions from other parts of the world

The coast is fringed by mangroves and coureda trees, behind which are cultivated slips of land, and, extending into the interior as far as the base of the mountains, are vast savannhas and dense forests. The trees are lofty, towering to a surprising height, their branches and trunks festooned with parasitic plants, and interlaced by bush ropes, which, after climbing to a height, descend again to the earth and take root. The palm trees are of various kinds, and abound in the forest. The capabilities of the colony for affording supplies of timber are great, the varieties of wood being numerous, and unsurpassed in size and durability. Many yield medicinal substances, but their exact extent has been but imperfectly investigated. The three kinds of trees of most use for house and ship-building are the green and purple heart, the wood of which is very close grained and very heavy. The Indians construct canoes from the bark of the purple heart, stripped off, green, after the tree is cut down. The walaba is the next most useful, and is abundant. It is cut up into shingles, and almost universally used as a substitute for slate in roofing. The cocoa-nut tree grows in abundance.

The bully tree is the largest of all, often measuring six feet in diameter, it is used in building. Cedar trees are numerous, and very lofty, reaching a height of eighty feet. To enumerate all the varieties would be unnecessary in this report.

Of medicinal nature, laurel trees are very numerous, from which is obtained the oil, much used here for rheumatism. Quassia Amara, or bitter ash, is met with on the borders of the River Berbice. Ipecacuanha root is found in damp and shaded forest places. Guiana produces also several kinds of sarsaparilla, much used among the Indians.

The forest trees, too, afford resinous juices, medicinally in use here for their healing properties. Balsam copaiva is procured from many species of the genus *copaifera*. The seeds of the dali, a large tree found on the banks of rivers, when subjected to boiling water, produces a substance resembling tallow, and is sometimes used in the preparation of candles.

Dyes are procured in great varieties from many of the trees, used principally by the native Indians.

Guiana produces many grateful fruits of forest growth—pine-apples, guavas, marmalade fruit, and sapodillo; the latter is very like, in appearance and taste, the medlar.

Of the animal kingdom in this colony there are the following—the tiger, which is of very large size; the puma, or American lion, and many of the cat tribe. There are deer of different species, and the ant-eater, armadillo, sloth, otter, polecat, and opossum. Monkeys are numerous, and often used as food by the Indians. The beauty of the feathered tribes is, I believe, not to be surpassed in any part of the world, as to brilliancy and variety of their plumage. Lizards, alligators, land tortoises, and turtles, abound. The snakes, many of which are poisonous, consist of rattlesnakes, parrot-snakes, and Guiana snakes.

Among the ant species, the most destructive is the white ant; the sting of the red ants is painful, and they are also extremely destructive. Scorpions and centipedes are often met with. There is a very minute insect found in the sand, the chigo, *vulgo* "jigger," which enters the integuments of the hands and feet, and is only discovered after it has deposited its eggs, which produce great irritation. I, however, have never seen any bad effects from its presence in the skin. Mosquitoes abound, and, on the approach of wet weather, produce intense irritation, thrusting their probosces through ordinary clothing.

The present inhabitants of British Guiana consist of Africans, Americans, Chinese, Europeans, and the Aborigines. In 1829, the population was 78,737. On referring to table No. 1, at end of this report, the present population will be seen, showing a vast increase. The Portuguese are the most thriving class, and have succeeded in securing almost the entire trade of small retail shops in both town and country.

The staple products of the colony are sugar, coffee, rum, molasses, charcoal, timber, and cocoa-nuts. Table No. 1 shows the exports of the colony, to which necessarily must be added the articles of local consumption. The increase of exports is necessarily dependent on the extent of imported labour, therefore we may fairly calculate that the increasing immigration will carry with it increase of exports. Coffee is but little cultivated, indeed, is insufficient for local use, as the soil yields a larger return from sugar.

Cotton, too, formerly an article of export, is now not cultivated.

There has lately been organized a militia force, consisting of a fine and effective body of men. There is also an admirable police force, composed of blacks and whites.

Georgetown (formerly Statrock) is situated on the east bank of the River Demerara. The streets are wide, but irregular. The houses are all built of wood raised on pillars, having verandahs round them, and usually surrounded by a garden. This arrangement does not, however, exist in Water Street, the commercial street running close to the shore, where the houses are contiguous, and crowded together, and where business is transacted on the ground-floor. In this street the virulence of epidemics has always been most felt. Canals and trenches traverse almost every street. The Governor's house has been lately repaired, but in position, and in size, does no credit to the colony.

The gaol is situated at the east end of the town. It is not extensive, but is well regulated. The prisoners work for ten hours, and their ordinary diet is 2 lbs. cooked plaintains, ½ lb. cooked meat, or salt fish. They usually leave the jail fatter and heavier than they entered it. All soldiers under sentence of imprisonment for seven days are sent here, and fare the same.

There is an excellent market for meat, vegetables, and fruit. The price of meat is comparatively high. Mutton being 1*s*. 4*d*. and beef and pork 10*d*. a pound. Vegetables and fruit are not expensive. Bread is 4*d*. a pound, and usually very good.

The plantain is the staple vegetable of the country, and forms the chief article of every meal amongst the lower class.

New Amsterdam, the capital of Berbice, is situated at the mouth of the River Berbice. The character of the surrounding country partakes of the same peculiarities as that round Georgetown. The houses are straggling, and are surrounded by gardens. There is a temporary residence for the Governor near the shore. Commerce is neither extensive nor flourishing. A steamer runs between it and Georgetown once a-week.

There is a penal settlement on the Magaruni river, distant from Georgetown about eighty miles. All cases sentenced to long imprisonment are sent there. The buildings are good and commodious, and the internal arrangements admirable. I had an opportunity of visiting it, and was kindly favoured with the dietary (*vide* Table No. 2). The men invariably become heavier after confinement.

Some cases of yellow fever having occurred this year in the colonial hospital, and fearing an epidemic of that disease, I applied to the officer commanding the troops, for permission to select an encamping ground to be prepared for such a contingency. Two sites were proposed, the sand hills, and a place called Belfield. After inspecting and examining the relative advantages of the two localities, we decided that the latter, distant from Georgetown about fifteen miles, and near the railway terminus, was the most eligible.

Having given a general, but, I fear, imperfect view of the colony, I now propose to describe the military stations including Demerara and Berbice, the others having been abandoned sometime ago.

The form of the garrison ground at Demerara is triangular, exposed to the free and uninterrupted current of the prevailing trade wind. It has an area of 51 acres. The ground is quite free from brush-wood, and is now little affected by malarious exhalation. The drainage is throughout remarkably good, and sufficient to preserve the ground from humidity; the parade ground, however, being damp, is undergoing tile drainage, a system which will, I incline to think, be unsuccessful.

The position of the Military Hospital abuts nearly on the sea wall—a situation that could not have been equalled, receiving as it does the full influence of the breeze. It is situated on an area of ground of four acres in extent, running east and west, and the Hospital consists of two wings, of two stories each, connected by a gallery. It is built of the green heart tree, and raised about ten feet from the ground. The space below is not used for any purpose. The building is capable of containing 148 patients. It is divided into eight wards, two above and two below in each wing. The wards in each storey are not entirely separated by partitions, but have an open and free communication. There is a wide gallery, closed by jalousies, round the whole building above and below. At the south-east corner of each gallery is a water-closet. The whole building, being admirably constructed, admits of the freest ventilation, and is perfectly protected from rain. The wards are very lofty and well proportioned for the present distribution of patients. I regret to say the east wing is occupied by troops, causing considerable inconvenience in maintaining hospital discipline. The walls of the Hospital are painted stone-colour, and the floors are kept clean and bright by dry scrubbing and bees-wax. The present place for performing personal ablution is at the east end of the north gallery, where basins, &c., are provided. The galleries are ten feet wide, and those patients who are allowed to be out of bed dine there.

The clothing of the patients consists of a jacket and trousers, of woollen material, which I invariably cause to be used instead of the cotton, from the humid nature of this climate. Since my arrival I have had constructed bed-side tables between the beds, affording great increase of comfort and convenience. There is a bath-room attached to the east wing, but its distance precludes the patients in the west wing from taking advantage of it.

There are two iron tanks under the adjoining ends of each wing, for a description of which, and their capacity, *vide* Table No. 6. The water is good and sufficient. Slipper baths are used, and every patient coming into hospital is ordered one.

Running at right angles with the outer and south corner of each wing is a covered passage leading to the kitchens, which are lofty and well ventilated.

Immediately in rear of the kitchens are the latrines, constructed over drains, and they are purified by flushing. There is a want of urinals, and ablution rooms in this establishment, which I have represented, also of ash-pits. The latter are in course of erection. In the same line with the kitchen, and running in similar direction, distant about twenty yards, is the dead-house, containing two compartments, furnished with every requisite.

About twenty yards from the dead-house, in the same line, but facing north and south, is the building appropriated for pack and provision stores; also the hospital serjeant's quarters. A building, corresponding in position, on the east side is appropriated for a surgery, Principal Medical Officer's office, and a room for the use of the medical officers.

At the extreme end of the hospital ground, and placed at its entrance, is the room for the hospital guard. The building is raised from the ground, and constructed for four men, it contains 1,915 cubic feet of space.

On a line with the main building of the hospital, some 500 yards to the east, is situated the Royal Engineer's offices, and at a little distance further to the east again is the quarter occupied by the officer commanding the troops. The latter is like the others, raised from the ground; it is commodious, and in a very healthy position.

Extending for about 300 yards backwards, is a tract of uncultivated ground, at the extremity of which is the officers' cemetery. The main road bounds this, running east and west, in a straight line, at the western end of which is the Fort Adjutant's quarters, and at the eastern a bridge, forming the boundary of the garrison ground there. Further to the south, and on the other side of the road, are situated the officers' Barracks. They lie east and west, and are composed of two wings, two stories high, raised on brick pillars, six feet from the ground: the rooms are lofty, well ventilated, and protected from the weather: they are surrounded by a verandah.

The space beneath these quarters is occupied by the officers as a stable, there being no other in the garrison. This I conceive most objectionable. Parallel to the outer extremity of each wing are two tanks, one on each side; farther outwards, again, are servants' quarters. Running at right angles with the latter are the officers' kitchens, airy and well ventilated.

Immediately in rear of these buildings, running backwards, and to the west, is the parade-ground, having an area of six acres. It is square in form, and now undergoing tile-draining. In rear, again, of this ground are the soldiers' barracks, "Eve Leary." The barrack-yard is nearly square, having an area of five acres. The guard-room at the north entrance is commodious, and sufficient for the guard, eight in number: it is raised from the ground six feet, and contains 7,948 cubic feet of space.

Placed opposite to the guard-room is an old building, formerly used as cells, but much too close and confined for present occupation.

Distant from the entrance-gate, running east and west, are the Barracks for the men, consisting of two wings and two stories, raised eight feet from the ground by brick pillars. Each storey has a verandah running round the building, under the same roof. The rooms are lofty, well ventilated, and protected from the weather. On a reference to Tables Nos. 3 and 4, the authorized occupation and present distribution will be seen. Beneath the west wing is a small inclosed space, formerly used for keeping gun-carriages.

At the extreme ends of each building, running at right angles, separated by a space of ten yards, are the urinals, the east end one newly-repaired; that on the west side about to be so. On the same line, but more to the rear, are the latrines. Attention is paid to see them periodically cleansed, and lime thrown down them. Further on, at the west side, is the women's wash-house or shed, and drying ground. On the opposite or east side are some condemned buildings, also the school-room and Quartermaster's store. At the end of the barrack-yard, and facing the buildings, is the Staff-Serjeants' quarters, of two stories, but nearly resting on the ground. In the upper rooms the Staff-Serjeants are quartered. The rooms are airy and well ventilated, the west and lower room is occupied as a canteen, is sufficiently large, and the articles sold are cheap and of the best quality. The other lower rooms are occupied as shoemakers' shop, store-rooms, and one as a military labourers' room.

In rear of this building is the cook-house, which borders on the south limits of the Government grounds, separated from colonial ground by a deep trench and rail. In front of the cook-house, and somewhat in rear of the Staff-Serjeants' quarters, and on west side of the barrack-yard, is the bath-house for officers and men, now in course of completion, and the artesian well; for capacities of which bath, *vide* Table No. 5.

The wants in Eve Leary Barracks are—1st, a room for prisoners, apart from the guard-room; 2nd, an ablution-room, of which none now exists, but is proposed in estimate for 1861; 3rd, better accomodation for women's wash-house.

At the south end of the parade-ground are situated the garrison cells; a building elevated from the ground three feet by solid masonry, containing six cells, giving 690 cubic feet per man. The cells themselves are well ventilated and fitted up, but there is requirement for a free current of air below, which want I have represented, and I believe is to be remedied.

Parallel to the cells, and distanced about ten yards, is the garrison bakery, a square well sized building, attached to it are two good tanks.

The square portion of ground forming the centre of the triangle of Ordnance land is Kingstown Ward. It is subdivided into four streets, running parallel to the river. In the south-west corner of Kingstown, adjoining the Cumingsburg Canal, is a slip of ordnance land 53 yards broad and 310 long, extending to and having an outlet on the principal street in Kingstown. The Superintendent Medical Officer's quarters, now occupied by the Resident Royal Engineer, are placed at the river side of this site, and the Kingstown Barracks on the land extremity. The entrance to the Barrack inclosure is from the road which forms the north boundary of the colonial land. The Barrack runs east and west, is of two stories, raised like the other buildings from the ground on brick pillars, standing in an area of three acres of land. Each storey forms one room, surrounded by a broad closed gallery. The rooms are lofty and well ventilated.

Opposite the west side of the Barracks is the guard-room, raised from the ground, and having two cells attached to its south end. Attached to the Barracks are men's and women's latrines, over trenches, and at the east corner of the building is a large tank in good order.

Fort Frederick, which forms the north-east side of the

Ordnance ground, being between the sea on the east and the river on the west, is protected by the sea-wall from encroachments which have for some time been progressing. In this fort are placed the ordnance stores, and the storekeeper's quarter. This quarter is one of the best in the Command; raised from the ground by brick pillars ten feet high. The rooms are unusually lofty, and well ventilated.

The Drainage of this Station is very good, each inclosure being surrounded by a deep trench, emptying itself into a canal communicating with the sea, regulated as to the egress and ingress of water by the tide and by sluices. Flushing of these drains and trenches is performed when occasion requires. The sea has made inroads since 1846, but the substantial sea-wall, now in course of formation, will prove an effectual barrier to its further encroachments. On the north-east extremity of the ordnance land the sea occasionally breaks through the temporary dams and floods the adjacent country during the spring tides, but I have not witnessed any increase of disease during the evaporation of this water from the land.

The position of the colonial Hospital has been well selected, but is exposed more to malarious influence than the garrison Hospital.

Before concluding my description of the Station, I will offer a few remarks, suggestive of increased comfort to the soldiers, and tending to afford better protection against the influence of this climate. With regard to "*dress*," no definite order is extant as to the description of shirts or socks for use amongst the troops. They usually wear cotton, with commonly a thin flannel shirt beneath, purchased by themselves, but the use of which is not imperative. I would recommend the general and compulsory use of flannel shirts, instead of cotton or linen, and of worsted socks. As evidence of the necessity for such precautions here, I would observe that the poorest civilian, however ragged his outer clothing may be, never fails to wear a flannel shirt, and the evidence of all the civil practitioners is corroborative of the value of this under clothing. The red tunic is much too thick, and the lining, which is thick serge, should be of thin flannel.

Further, I cannot but believe that the change, frequently occurring several times during the day, from the thin-lined regulation shell-jacket to the before-mentioned warmly-lined tunic, must, sooner or later, be attended with injurious results.

As a prophylactic measure, I would urge the advisability of administering quinine to the men, more particularly during the rainy seasons and the prevalence of an epidemic, and providing, during the latter, a more liberal diet with regard to the white troops, restoring the beer-money, and enforcing its expenditure in good beer or rum.

Another point worthy of consideration, I conceive, is the giving instruction to the most intelligent of the non-commissioned officers on the primary symptoms of yellow fever, when an epidemic has been declared to exist, with a view of having every man, in the first stage of the disease, brought to the Medical Officer. I have it on the evidence of the medical practitioners here, and which is fully corroborated by Government statistics, that mortality was very much increased by the fact of the primary stage having passed before the patient was brought to the notice of the practitioner; and such is the characteristic of the soldier, more particularly when suffering from the superadded effects of a panic, that he puts off by every means his removal to hospital, thereby rendering the disease more difficult to combat.

I proposed some time since that the men should be provided with baked meat twice a-week, a proposition which met the approval of his Excellency the Commander of the Forces, on his late inspection visit here, and, on a a reference to the Resident Royal Engineer, he informed me that ovens could be readily constructed at a very small expense. The incessant boiled beef and soup, it may readily be believed, would gladly be exchanged for an occasional pie or piece of roast beef.

The patients in hospital have at present no ground to exercise on except the front of the building or the space between it and the sea-wall, which is swampy and covered with grass. In wet weather this is a perfect swamp. I propose that a certain portion be paved, or covered with gravel and shells, and railed in, for the purpose.

Much attention has been given at home, and in some colonies, to affording amusements for the men, but at this station there are none, where, of all others, they are most required. Visits to grog-shops naturally become more frequent, and the keepers of these are not slow in taking advantage of the omission, and in providing for excitement and sensual amusement, inevitably ending in crime. I feel justified, from all I see and hear, in urging the authorities to make some provisions for the occupation and amusement of the men, being convinced, from previous experience, that at least two-thirds of them would readily take advantage of the same. There are capabilities of erecting and forming a ball-court, cricket-ground, quoit-ground, &c., at very small expense. I trust this matter may receive its full share of consideration on the part of the authorities.

The other Station of the Command is Fort Canji, Berbice, one of the oldest military stations in the colony, situated on the right bank of the River Berbice, about five miles from the sea, and in an angle formed by the confluence of the Canji and Berbice rivers. It was much more flourishing before the abolition of slave-labour, and space now covered with brush-wood was once highly cultivated.

This fort, or station, was at one time exceedingly unhealthy, and, in consequence, the troops were withdrawn and the barracks sold. On a threatened outbreak, however, they were again sent there, and the buildings repaired.

The area of Fort Canji is 99 acres, surrounded by swamp and brush-wood. It is situated about half-a-mile north of the town, with which it communicates by a long straight road.

The buildings are constructed much on the same principle as those of Demerara, being of wood, and similarly raised from the ground on brick pillars. The officers' quarters are the furthest distant from the river, consisting of two storeys, having a gallery all round, not closed. The rooms of these quarters are commodious and well ventilated, and in good repair. In rear is the kitchen, behind which is the latrine, the former limited in extent and out of repair. On the opposite side of a plot of trenched grass ground, and facing the officers' barracks, is an old building, formerly used as a Commissariat store, and very lately as the hospital, but now appropriated as a quarter for the married people not accommodated in barracks. It consists of two stories, having an inclosed space below occupied by barrack-stores, except one apartment used as a school-room. The house is ill-ventilated; there is no latrine or ablution-room attached; the windows are not jalousied, and have no protection from the sun. On my first visit, this house was used as a hospital, but I requested that every effort should be made to complete the new one now in use.

The present Hospital is situated a little to the south of the last-mentioned building, supported on piles six feet high; it is composed of two stories, running north and south, having two wards below, capable of accommodating four patients each, and one ward above also for four patients, together with surgery and serjeant's room.

The windows of the Hospital as yet have no jalousies; but they are to be put up immediately. The kitchen in rear, or nearer the river, is sufficiently large and well fitted up.

The area of the Hospital ground is small, surrounded by a palisade.

The present Strength of the detachment at this Station is—

4 Officers,
5 Serjeants,
5 Corporals,
107 Privates.—Black Troops.

The men's Barrack is situated about eighty yards riverward from the Hospital, running at right angles to it. It was formerly a hospital, when the garrison was much larger.

The building is of two stories, raised from the ground about eight feet, having one large room in each storey. Each room is 63 feet long by 21 wide. There are about 14 inches between each bed. The men usually dine in the space below the building. There is no ablution room or other convenience for personal cleanliness. The men state they usually wash in the Canji Creek. I am not aware whether any means are proposed to remedy this deficiency. There is no regular bathing parade, but the men appear to avail themselves of the contiguity to the creek.

The guard-house is situated at the entrance of the Ordnance land, that portion nearest the town. It is large and airy and sufficient in size for the usual guard of six men, a serjeant, and corporal. At the back of this, and under the same roof, are two rooms for prisoners, and well adapted for the purpose. The cells are three in number, contiguous, and under the same roof, situated about twenty yards from the guard-room. They are small and badly ventilated, and altogether unsuited for occupation for any length of time.

Prisoners, for any long period of confinement, are sent to the civil prison.

On the town side of the barracks, between the latter and the outer trench, is the rifle ground, extending from the rear of the officers' quarters to the river. In wet weather it is swampy. I may here remark that the detachments of black troops are periodicaly changed for rifle practice, which I apprehend is the only reason why this station is still occupied.

On my first inspection the garrison ground was covered with weeds and rank vegetation, and in many parts there were gardens inclosed by fences of considerable height. After a strong representation on the probable ill effects of such being allowed to continue they were removed, and the surface cleared of all rank vegetation. Since which, musquitoes, then so intolerable as to require fires to be lit in the evening outside the buildings, have now almost entirely disappeared.

The Ordnance ground is encircled by a ring road, within which is a deep trench. The land in the garrison is well drained by side and cross drains.

No. 1.

Population of British Guiana in 1859.

	Whites.	Coloured.	Aborigines.	Aliens, not included in foregoing.	Total.
Demerara	8,857	10,570	4,830	51,516	75,773
Essequibo	1,758	1,845	2,774	18,548	24,925
Berbice	949	2,339	2,099	21,646	27,033
Total	11,564	14,754	9,703	91,710	127,731

Total Population, 127,731.

Immigrants.

Coolies	13,780
Chinese	233
Portuguese	1,608
Africans	890

These are only under indenture to estates.

Exports from British Guiana, 1859.

Sugar	36,994 hogsheads.
Rum	13,887 puncheons.
Molasses	2,350 puncheons.
Coffee	1,397 barrels.
Charcoal	12,774 barrels.
Timber	153,396 cubic feet.
Shingles (Wallaba)	1,189,200.
Cocoa nuts	190,536.

No. 2.

Table of Dietary at Penal Settlement for Convicts at Work and in Hospital.

Full Diet, and Convicts' Diet out of Hospital.	In Hospital. Half Diet.	In Hospital. Spoon Diet.
For Breakfast: 1 lb. 7 oz. plantains, or 12 oz. biscuit or bread ¼ lb. salt fish. Same for dinner. Those who are at extra work have a pint of soup made of vegetables, and pork or fish, and one gill of molasses. All out-door convicts have this diet, and some in hospital.	Breakfast: 5 oz. soft bread or biscuit. ¼ lb. fish. 1 oz. sugar. Dinner: 10 oz. bread or biscuit. 1 oz. sugar; or 4 oz. fish or pork. ¼ lb. barley. 4 oz. vegetables.	¼ lb. sago or arrow-root. 1 oz. sugar. or, 2 oz. tea. 1 oz. sugar. Biscuit in each case, ¼ lb.

In addition to the ordinary diet, the surgeon has the power of ordering anything extra, such as tins of soup, fowls, brandy, wine.

No. 3.

Strength of Troops.

Corps.	Officers.	Serjeants.	Drummers.	Privates.	Women.	Children.	Nights in Bed. Non-com. Officers.	Nights in Bed. Drummers.	Nights in Bed. Privates.	Remarks.
49th Regiment	7	7	3	124	10	25	6	..	6	
3rd West India Regiment	13	15	5	301	25	16	6	..	8	
Military Labourers ..	..	1	..	17	1	..	..	..	..	

Distribution.

Description of Building.	49th Regiment. Non-com. Officers.	49th Regiment. Drummers.	49th Regiment. Privates.	49th Regiment. Women.	49th Regiment. Children.	3rd West India Regiment. Non-com. Officers.	3rd West India Regiment. Drummers.	3rd West India Regiment. Privates.	3rd West India Regiment. Women.	3rd West India Regiment. Children.	Military Labourers Non-com. Officers.	Military Labourers Privates.
Eastern Wing Hospital:												
Upper room	4	2	27	..	..	..	..	..	..	..	..	..
Lower room	3	1	26	..	..	..	..	..	..	..	..	..
Eve Leary Barracks:												
East wing Upper room	..	..	..	..	..	5	1	47	1	..	..	..
East wing Lower room	..	..	..	..	..	5	..	56	3	..	..	..
West wing Upper room	..	..	1	1	..	5	2	34	2	2	..	..
West wing Lower room	5	2	51	..	..	..	..	..	..	..	..	..
Staff Serjeants' Quarters:												
Upper room	2	..	4	6	16	1	..	..	1	1	..	..
Lower room	..	..	..	..	..	..	..	..	..	..	2	14
Kingston Barracks:												
Upper room .. Lower room ..	..	..	..	..	..	2	..	15	17	21	..	..
Detached Quarters:												
Eve Leary	..	..	4	4	5	2	..	10	2	1	..	..
Hosp. Officers' Quarters	1	..	3	..	..	..	..	..	..	..	..	..
Berbice:												
Upper room .. Lower room ..	..	..	..	..	..	11	2	106	19	18	..	..

No. 4.

RETURN showing the authorized occupation of Barrack-rooms, with cubic feet per man at that ratio.

Description.	Rooms.		Total.	Cubic feet per Man.		Remarks.
	Upper.	Lower.		Upper.	Lower.	
East wing, Hospital ..	42	32	74	851	805	
Eve Leary, East wing ..	74	74	148	650	624	Without including verandah.
" West wing..	74	74	148	650	624	
Detached Quarters ..	..	..	Nil.	..	..	
Staff-Serjeants' Quarters .	7	..	7	8,874	..	Cubic feet in each room.
Kingston Barracks ..	23	27	50	546	556	
Berbice	40	40	80	1,069	1,095	Enclosed. This includes the gallery all round, the side walls of room being only boarded half-way up their height.

No. 5.

Memo.

The soldiers' bath contains 1,776 gallons of water; it takes 8¼ hours to fill, and 1½ hour to empty. The officers' bath contains 405 gallons of water; it takes 3¾ hours to fill, and 15 minutes to empty.

When the baths are full, the supply pipes remain open, so that the water be kept pure by a stream constantly passing through it.

As often as the baths require cleaning, the water is let off at four o'clock in the evening, and let on again when the cleaning process is completed. that the baths may be ready for use by six o'clock next morning.

The soldiers' bath is 9 feet 6 inches long, 9 feet wide, and 3 feet 4 inches deep.

The officers' bath is 6 feet 6 inches long, 3 feet 9 inches wide, and 2 feet 8½ inches deep.

The time taken to fill these baths from the artesian well varies considerably, perhaps from the effect of the tides.

No. 6.

TABLE of Capacity of all Tanks in the Garrison of Demerara.

No.	Situation.	Capacity in gallons.
1	Kingston Barracks	43.263
2	Do. Officers' Quarters	4.900
3	Fort William-Frederick Military Storekeeper's Quarters	10,790
4	Do. Military Storehouse	6,984
5	Commissariat Store	10,005
6	Fort-Adjutant's Quarters	3,590
7	Military Store Clerk's Quarters	4.156
8	Military Hospital	10,005
9	do.	4,273
10	do. (under Hospital)	3.467
11	do. do.	3,467
12	do.	10,005
13	do.	4,273
14	Engineer Yard	8,380
15	do. Office	4,156
16	Resident Royal Engineer's Quarters (now Commandant)	3,240
17	Officers' Quarters, West wing, Eve Leary	3,588
18	do. do. do.	3,588
19	do. do. do.	5,070
20	do. East wing do.	4,273
21	do. do. do.	4,273
22	do. do. do.	3,588
23	Mess Kitchen do. do.	3,588
24	Commissariat Bakery	4,273
25	do. do.	3,588
26	Garrison Cells	4,273
27	Principal Medical Officer's Quarters (late C.W's. Quarters)	5,070
28	Soldiers' Barracks, West wing, Eve Leary)	8,683
29	do. do.	10,005
30	Women's Wash-house do.	26,081
31	Soldiers' Cook-house do.	8,310
32	Staff-Serjeant's Quarters do.	29,808
33	Soldiers' Barracks, East Wing do.	10,005
34	do. do. do.	10,005
	Total	283,023

ABSTRACT OF THE ANNUAL MEDICAL REPORT OF THE ROYAL ENGINEERS, STATIONED IN BRITISH COLUMBIA, FOR THE YEAR ENDING 31ST DECEMBER, 1859; WITH TABLE OF METEOROLOGICAL OBSERVATIONS TAKEN DURING THE YEAR ENDING 31ST MAY, 1860.

By J. V. SEDDALL, M.D., *Assistant Staff Surgeon.*

THE expedition formed for special service in the colony of British Columbia was organized in the month of August 1858, and consisted of the following troops, viz.—150 non-commissioned officers and sappers of Royal Engineers, 1 serjeant and 1 corporal of Royal Artillery, 1 serjeant and 1 corporal of 15th Hussars, 1 hospital orderly Medical Staff Corps, 1 colonel, 3 captains, and 2 lieutenants of Royal Engineers, and 1 Staff Assistant-Surgeon.

Two detachments, consisting of 2 captains and 32 men, left England in September, 1858, arriving, *viâ* Panama, in British Columbia in December, 1858.

The head-quarters of the Columbian detachment, consisting of 1 captain, 2 subalterns, 1 staff assistant-surgeon, 118 non-commissioned officers and men, 31 women, and 34 children, embarked at Gravesend on the 9th of October, 1858, on board the transport ship "Thames City," and reached Vancouver Island, *viâ* Cape Horn, after an exceedingly prosperous voyage of six months and three days, including a fortnight's stay at the Falkland Islands, and four days' stay at Valparaiso.

During the voyage, the health of the party, generally, was excellent. No sickness whatever prevailed among the men, women, or children. Ten births took place during the voyage; one death (from phthisis pulmonalis) occurred amongst the women, and two deaths amongst the children.

The last detachment, consisting of two non-commissioned officers and two sappers of Royal Engineers, and one corporal of Royal Artillery, with their wives and families, reached Vancouver Island, *viâ* Cape Horn, in the barque "Euphrates," laden with Government stores, on the 25th of June, 1859.

The first step taken by Colonel Moodie, Chief Commissioner of Lands and Works, on his arrival in the colony of

British Columbia, was to select a site for the future capital, and, to this end, he decided on establishing a town in a very suitable locality, on the right bank of the Fraser river, about seventeen miles from its mouth, which was first called Queenborough, but to which the name of New Westminster was subsequently given.

As soon as the site of the town was decided on, the detachment of Royal Engineers which had arrived, *vià* Panama, (and which had since arrival been quartered at Langley, a Hudson's Bay settlement on the Fraser river, fifteen miles from New Westminster) was removed to the locality, and soon became occupied in clearing the land (which at that time was a dense forest, covered with thick brush), in surveying the ground allotted for the town, and measuring and laying out town lots, according to the plan drawn up by Colonel Moody. The services of a number of civilian artificers were engaged to assist in laying out the town, and contracts were given out for the erection of a custom-house, custom-house wharf, treasury, court-house, &c.

The portion of ground reserved by Colonel Moody as the site of the camp, for the occupation of the troops, is situated on the banks of the Fraser about a mile and a half north of the commercial portion of the town, and is admirably fitted for the purpose for which it has been selected.

The Royal Engineer camp faces towards the east, and is situated on a sloping bank which, on the first arrival of the detachment, was a dense forest of pine-trees, spruce, cedars, hemlock, maple, &c., with a thick underbush of roses, thorns, wild gooseberries, currants, raspberries, cherries, &c.

The ground inclines gently backwards, from the edge of the water, into the forest behind, and pure spring water may be procured in almost any part of the camp by digging a few feet for it, although the surface, which has been cleared of vegetable deposit, is perfectly dry owing to the sandy nature of the soil, and its inclined position affording natural drainage.

The general character of the soil about New Westminster and its vicinity is sand and gravel, interspersed with clay, which, in some parts, is so mixed with gravel and indurated, as to give it the appearance of a conglomerate.

The latitude of the camp at New Westminster is 49° 12′ north, and its longitude 122° 49′ west. The observatory is about fity-four feet above the level of the sea.

The Fraser river runs nearly north and south at New Westminster and is, at this point, little more than three quarters of a mile in width.

In a sanitary point of view, both the town and camp of New Westminster may be considered as most eligibly situated. No marshy ground whatever exists in their vicinity, and, although some portions of the south part of the town are overflowed by the Fraser river at its highest rise in summer, they soon dry up, under the influence of a few days' sun and breeze, shortly after the river commences to fall.

During the summer months a most refreshing sea-breeze from the Gulf of Georgia generally prevails for a couple of hours before and after noon, which, however, does not reach higher than two or three miles up the river. This breeze is highly beneficial to this locality and tends considerably to render it one of the most salubrious stations on the North Pacific Coast.

On arrival of the head-quarters in the transport-ship "Thames City" at Esquimalt, Vancouver Island, the whole force and the baggage were conveyed by detachments up the Fraser river in a steamer engaged for the purpose.

As no accommodation had been provided at New Westminster for the women and children, they were sent on to Langley, where a commodious barrack had been erected, and where they took up their residence until the completion of the barracks and married people's quarters at the former place.

About the middle of April a detachment of Royal Marines which had, a short time previously, arrived from China, consisting of 133 men and 6 officers, was moved to New Westminster, and encamped on an elevated bank of the river on the right of, and close to, the Royal Engineer camp. Their duties were principally confined to making roads, building bridges, clearing the forest, and assisting to lay out the town. They were stationed in British Columbia till the 1st of August, when they were removed to Victoria, on account of the San Juan difficulty, which arose at that time between the American and British Governments.

For upwards of six months after their arrival in the colony the troops were encamped under canvas, some in bell-tents and some in marquees; the tents were properly trenched all round, and each man was provided with a camp sheet.

The hospital accommodation consisted of three tents, two marquees for the sick, and one for a surgery and store tent; the floors were boarded, and every attention was paid to the comfort and requirements of the patients.

In June, the married people's quarters were completed, and the women and children were removed from Langley to

New Westminster to occupy them. They consist of nine separate wooden blocks or houses, each containing three rooms, measuring 18 feet by 20, with a common verandah in front, facing the river. Each room is occupied by one family, and every facility has been afforded to the inmates to enable them to construct partitions, and render their rooms otherwise comfortable. Some have erected kitchens and outhouses, and most have papered and partitioned off their rooms. The blocks are situated in a row, on the slope of the hill to the rear of the present camp, sufficient space of ground having been left between them to admit of each family having a good sized garden, for the purpose of growing vegetables. The rooms are well lighted, properly ventilated, and furnished with fire places built of bricks, well adapted for cooking and other purposes.

The single men have been accommodated in a capacious building, intended ultimately for a church, and calculated to accommodate sixty or seventy men. It is well ventilated, and heated by means of large iron stoves.

The permanent hospital was commenced in September, and completed in December. It is most eligibly situated in a sanitary point of view, commanding a fine view of the Fraser, and fully exposed to the refreshing sea breezes constantly blowing up the river.

The wards, two in number, and calculated to contain eight beds each, are 30 feet long, 20 feet broad, and 17 feet high up to the ceiling, the height up to the square of the walls being 12 feet. The cubic contents of each ward are about 8,750 feet, thus allowing nearly 1,100 cubic feet of space for each patient. The wards are provided with open fire-places, and are well ventilated; light is admitted by means of a window, with swinging sashes at the side, placed so high above the verandah as to allow access to the direct rays of the sun.

The surgery and hospital serjeant's room are well lighted by means of bow windows. The surgery is properly fitted up, and a bath room is likewise provided, with everything requisite to facilitate cleanliness on the part of the patients.

The kitchen and latrines are detached from the main building, and are connected with it by means of a covered-way, divided down the centre by a partition, which completely shuts off the one from the other. The verandah which surrounds the hospital is a valuable addition to the building, and adds greatly to the comfort of the patients, enabling them to take exercise in almost any weather.

The officers of the detachment were under canvas until November, when temporary quarters were provided for the winter, no permanent quarters having as yet been constructed for the single officers.

The following is the scale of rations, issued free to the men, women, and children of the detachment:—

Daily.—Fresh meat, 1½ lb., or salt meat, 1¼ lb.; bread, 1¼ lb., or biscuit 1¼ lb.; vegetables, 1 lb.; coffee or chocolate, ½ oz., tea, ¼ oz., or double of either alone; sugar, 2 oz.; tobacco, ½ oz.; soap, ½ oz.; salt, ½ oz.

Weekly.—Mustard, ½ oz.; pepper, ½ oz.; vinegar, ½ pint; at times cranberries, currants, rice, &c., in addition; peas or beans sometimes instead of vegetables, if necessary.

Women.—Three-quarters of men's rations, in respect of meat and bread, but the same in groceries.

Children.—Half men's rations. Children under one year of age no rations.

No free ration of spirit or malt liquor is allowed to the men at New Westminster; a supply of good beer or porter is, however, kept on hand by the Acting Quartermaster-Serjeant, and sold in limited quantity to the men at cost price. Parties working on roads and trails in the interior, where beer is not procurable, are, however, allowed a daily ration of rum.

In addition to the vegetables allowed as a ration, the men of the detachment were, from time to time, supplied with fresh vegetables from the camp garden, in which were sown the seeds furnished amongst the medical stores.

The clothing supplied to the detachment as a working dress is admirably adapted for the purpose, and well suited to the climate. It consists of a short blue cloth jacket, with red facings, moleskin trowsers, felt hat, red flannel shirt, and long boots. In addition to this, each man has been supplied with a cloth capôte with hood, a woollen scarf, a pair of warm gloves, and a complete suit of waterproof clothing for winter wear.

The duties and employments of the detachment have been, on the whole, of a very salutary nature, being confined principally to clearing land, felling timber, erecting wooden buildings and storehouses, constructing bridges, laying out the town of New Westminster, surveying suburban and rural lots, making roads, &c.

Several small detachments have been despatched throughout the country during the year.

In June, Lieut. Palmer, R.E., with two Sappers, returned from the upper country, having visited the mining districts, and carefully surveyed and inspected the trail which connects Port Douglas with the diggings on the Fraser and Bridge rivers, known as the Harrison and Lillouet trail. Having reported that, in consequence of the non-existence of a safe and proper means of communication between the Lower and Upper Fraser, the miners were suffering from great scarcity of provisions, which ultimately compelled them to leave the country altogether, and having ascertained that the nature of the land between Port Douglas and the Upper Fraser would easily admit of the construction of a good waggon-road, which would greatly tend to open up the country, and thus advance the interests of the colony, the Government authorities decided on employing a party of Sappers and Royal Marines to effect this purpose. Accordingly, on the 21st of June, a detachment of 1 captain and 50 non-commissioned officers and sappers of Royal Engineers, and 1 captain, 1 subaltern, and 50 Royal Marines, accompanied by myself in medical charge, left New Westminster by steamer, arriving at Port Douglas the following day; Assistant-Surgeon Mitchell, R.N., having been left in medical charge of the Royal Engineers at head-quarters.

Port Douglas is a town recently established on Lake Douglas, near the head of Harrison lake, which latter empties itself by means of the Harrison river into the Fraser. The distance between New Westminster and the mouth of Harrison river is nearly 60 miles. The Harrison is 10 miles long, and Harrison lake is 30 miles long, averaging in width about three-quarters of a mile. At the head of Harrison lake, a small channel at its left corner opens into Lake Douglas. This is a small sheet of water about a mile and a-half long, and one-third of a mile broad, and almost entirely inclosed by high mountains, densely wooded with pines and cedar trees. The town of Port Douglas is situated at the head of its lake, in a valley which slopes gently backwards, joining a series of valleys running nearly parallel to the Lillouet river, and opening out into the Lillouet lake. The Lillouet river is thirty-six miles long, running from Lillouet lake in an easterly direction, and emptying itself into Harrison lake at its head.

The only communication between Port Douglas and the mining districts on the Upper Fraser has hitherto been by a mule-trail, which was constructed last autumn by a party of civilians. This, however, is very imperfect in many respects, being in some parts carried over very steep mountains, when it might have been made to follow the natural level at the bottom of the valleys, whilst in other parts it is rendered almost impassable from the rocky nature of the soil, and the rough state in which it has been left. The object of the present working-party is to construct a good serviceable waggon-road from Port Douglas to the Upper Fraser, widening out such parts of the trail as are approved of by the Officers of Engineers, and making such deviations and alterations as will conduce to shorten the road and facilitate its speedy completion.

The length of the waggon-road from Port Douglas to Lake Lillouet will be nearly thirty-six miles, and will run almost the whole way parallel with the Lillouet river. The Lillouet lake, sixteen miles long, will then be crossed by vessels, and the road continued to Anderson lake, a distance of twenty-four miles. Communication with the Upper Fraser will then be established by water along Lake Anderson, sixteen miles long, and Lake Seaton, eighteen miles in length, a small land-distance of a mile and a quarter dividing the two lakes; the remaining distance between the head of Lake Seaton and the Fraser river being four miles of flat arable prairie land.

The two camps of Engineers and Marines are four miles apart, and the two parties are at present working towards each other; when they meet, the camps will be shifted further on the road.

On the 25th June, I accompanied Colonel Moody, R.E., on a visit to a hot spring, twenty-five miles from Port Douglas. It is situated on the bank of the Lillouet river, near the line of the waggon-road. The water rushes out from beneath a large rock, at the foot of a steep mountain, by two small springs. I ascertained its temperature, at the mouth of the spring, to be 130° Fahrenheit, and it emits a very powerful odour of sulphur and sulphuretted hydrogen. On analysis, I found it to be saline, containing neutral salts, principally the sulphate of soda, with small quantities of chloride of sodium. Taken internally, it has a slightly purgative effect. The use of the hot-bath, however, is likely to be attended with beneficial results in cutaneous diseases, and in those cases requiring determination to the skin. We expect shortly to be encamped in the vicinity of the spring, when I shall take the opportunity of watching its effects on the system, and ascertaining its medicinal qualities more thoroughly.

Every attention has been paid to the issue of good wholesome rations to the parties working on roads, &c. Fresh meat and vegetables were issued, on an average, two or three days a-week, and a daily ration of half-a-gill of rum was allowed to each man.

Besides the working party on the Douglas road, several small parties have been despatched, from time to time, to construct trails, survey land, &c., at Langley, Hope, Yale, and Burrard's Inlet. A detachment of one officer and 14 men of Royal Engineers proceeded on special duty to the Island of San Juan in August, where they did duty for three weeks on board Her Majesty's ship "Tribune," anchored off the disputed island.

The condition of the detachment, as regards its internal economy, may be said to be highly satisfactory; the conduct of the men has ever since their arrival in the colony been on the whole excellent; very little drunkenness prevails amongst them, notwithstanding the strong inducements and temptations held out by the numerous American liquor establishments in the town of New Westminster.

The nature of their duties affords them healthy exercise during the day, whilst various intellectual amusements are provided for those who wish to profit by them in the evening. An excellent theatre has been erected at the private expense of the men, which is likewise used as a club-room, news-room, and reading-room. They also possess the advantage of an extensive library containing the best standard works of every description, and are provided with chess-boards, draught and back gammon-boards, &c. Instrumental music and glee-singing are a source of much recreation to those who are fond of music, and every assistance is rendered by the Colonel commanding, and the other officers of the detachment, to encourage the promotion of intellectual amusements and healthy occupations amongst the men.

The original strength of the detachment on leaving England was 155 non-commissioned officers and men, and 7 officers; 36 women and 42 children. The present strength of the men is 149, 5 having deserted and one man having been accidentally drowned; that of the women is 34, one having died on the voyage out of phthisis pulmonalis, and one having committed suicide; the present strength of the children is 51, 15 births and 6 deaths having occurred since leaving England. The strength of the officers of the detachment continues the same.

The health of the whole detachment has, without exception, been excellent throughout the year; there has been no sickness or epidemic of any description amongst either men, women, or children. The average daily sick in hospital has been between 2 and 3, and the cases under treatment have been, generally speaking, of a very trifling character.

Under the head of catarrhs we have had 14 admissions during the year, principally consisting of slight colds, contracted during the autumn, and which speedily yielded to treatment. We have had 8 cases of simple diarrhœa, averaging a duration of four days each, and brought on by drinking cold water in excess whilst road-making in hot weather.

Phlegmons and contusions have been most numerous, due to slight injuries received whilst felling timber and clearing land. There has been very little venereal disease in the detachment; 6 cases of simple chancre and 2 cases of gonorrhœa having been admitted during the year.

The cases of cynanche tonsillaris were of a very mild nature, arising from cold and wet, in individuals constitutionally subject to the disease.

The only death which has occurred amongst the men has been from accidental drowning whilst stepping from a vessel to the shore on a dark wet night.

The women and children have been unusually healthy throughout the year, no sickness of any description having prevailed amongst them.

Every man, women, and child in the detachment, bears satisfactory marks of vaccination. During the year 15 children born since leaving England have been successfully vaccinated, good fresh lymph having been procured from San Francisco.

The following is an Abstract of Meteorological Observations taken at the Royal Engineer Camp, New Westminster, during the year ending 31st May, 1860 :—

23rd February, 1860.—The highest reading of the barometer, corrected for temperature, was 30·600 inches; the mean height of ditto, ditto, 29·977 inches.

4th April, 1860.—The lowest reading of ditto, ditto, was 29·016 inches.

The cistern of the barometer is about 54 ft. above the level of the sea.

30th July, 1859.—Maximum temperature of air in shade, 93°. Mean ditto ditto, 51° 1′.

4th December, 1859.—Minimum temperature of air in shade, 2° below zero.

23rd June, 1859.—Maximum temperature in sun's rays, 112° 2′.

Greatest amount of humidity, 1°. Mean amount of humidity, ·793°.

2nd June, 1859.—Least amount of humidity, ·333°.

The limiting days of frost were, 1st November, 1859, and 14th May, 1860.

Table showing the Depth of Rain, the number of days on which it fell, the Mean Humidity, and the Mean Temperature of the air, in each month:—

	Inches.	Days.	Humidity.	Mean Temperature.
1859.				
June	0·594	5	·650	65·5
July	0·717	7	·690	68·6
August	1·770	6	·707	69·4
September	4·588	14	·841	60·6
October	11·519	15	·875	50·9
November	6·275	14	·848	35·9
December	4·245	12	·908	32·7
1860.				
January	9·498	16	·950	35·7
February	6·652	20	·897	39·7
March..	4·561	16	·752	46·7
April	2·750	12	·699	50·7
May	3·260	15	·703	56·8
Total	56·429	152		

11th November, 1859.—The greatest fall of rain in twenty-four hours, measured 2·540 inches.

The average daily fall throughout the year, was 0·154 inches.

The prevailing winds during the rain were southerly.

The prevailing direction of the wind during November, December, January and February, was westerly; during the remainder of the year, southerly.

There were two very heavy gales of wind during the year, one from the north-west, accompanied by hail, on the night of the 20th of February; and another from the east, on the 4th of April, which commenced about 2 A.M., and continued with great violence until the afternoon.

Thunder and lightning were very infrequent.

The test papers gave no indication of ozone on the 4th June, 27th November, 10th December, 1859, and 5th February, 1860. On all other days, the amount was considerable; the mean for the year being represented by the number 6 on the scale.

The barometer read high on the days when no ozone was indicated, but there were no observable atmospheric coincidences.

The water of Fraser river reached its highest level at New Westminster, in 1859, on the 8th June, and, in 1860, on the 12th June; having risen 6 inches higher than it was the preceding year. The lowest water during the year under observation, was on the 4th March, 1860, and was 10·5 feet below the level shown on the 12th June, 1860.

On the 19th August, 1859, the flood-tide in the Fraser ran upwards for the first time since May in that year, and on the 22nd May, 1860, it again ceased to stem the downward current.

The latitude of the observatory is 49° 12′ 47″ north; its longitude, as determined by the Royal Engineers, is 122° 49′ 15″ west, subject to revision after a longer series of observations.

REPORT

OF THE

MEDICAL BRANCH FOR 1859.

BY

H. MAPLETON, M.D.,

DEPUTY INSPECTOR-GENERAL OF HOSPITALS AND
HEAD OF THE MEDICAL BRANCH.

TO THE DIRECTOR-GENERAL

OF THE

ARMY MEDICAL DEPARTMENT.

6, Whitehall Yard,
December 1860.

Sir,

In compliance with the instructions contained in the Regulations for Conduct of Business in this Office, I have the honour to submit the Reports and Returns connected with the Medical Branch of the Army Medical Department.

I. Officers of the Department.—On the 1st January, 1859, there were 1,036 Medical Officers on Full Pay; and on the 31st December of the same year there were 1,075.

During the year, 90 Assistant Surgeons entered the service.

Eight Surgeons and 12 Assistant Surgeons died.

Two Inspectors-General, 2 Deputy Inspectors-General, 8 Surgeon-Majors, 3 Surgeons, and 1 Assistant Surgeon, retired upon Half-Pay; and 3 Assistant Surgeons were dismissed the service.

II. Circulars.—Reprints of the Orders that were issued to Officers of the Department during the year, will be found at page 380.

III. Transports.—On the outbreak of the Chinese War, in 1859, the Director-General of the Army Medical Department represented to the Secretary of State for War the necessity of sending out with the Expedition, large steam-ships for hospital-service, to be fitted with every requisite for the efficient treatment and accommodation of the sick and wounded. Such vessels were to accompany the force as closely as possible; and other ships were to be equipped and employed as stationary hospitals at various parts of the coast.

The "Mauritius" and "Melbourne," screw-steamers, of 2,134 and 1,450 tons burden, respectively, having been carefully surveyed, were fitted out at Deptford under the direction of a medical officer, who, acting under the supervision of the Director-General, was held responsible for the efficiency of the fitments, &c.—Vide page 337 for detailed description.

IV. MEDICAL AND SURGICAL TRANSACTIONS.—*Sun-stroke.* —Mr. Murphy relates two cases from among seven which occurred in the 91st Regiment during 1859, the one proving fatal and the other recovering—the application of cold being the chief therapeutical agent employed.

Dr. Todd objects to the term "sun-stroke," the direct influence of the sun not being necessary for the production of the affection. He regards it as a form of "heat-fever," produced by the congested state of the principal organs of the body. He employs quinine, cold douche and stimulants, and never resorts to blood-letting.

Dr. Barclay observes that men who have formerly led intemperate lives are most, though not exclusively, liable to sun-stroke. The attack rarely takes place during a march but is usually very sudden. In his opinion, the disease at first is entirely a nervous affection, the vascular system only becoming secondarily implicated. In treating the disease, he never resorts to blood-letting, but chiefly relies upon the application of cold, carefully watching its effect in depressing the circulation. In several cases, in which convulsions have been present, he has used chloroform with advantage.

Of 111 cases of sun-stroke treated in 1859, 44 proved fatal, and 67 recovered.

Dysentery.—Dr Massey regards variation of temperature as the chief exciting cause of dysentery in India, and does not attribute much effect to irregularities of diet, with the exception of the prevalent custom among soldiers of drinking large quantities of cold water. In the treatment of the disease he states that the greatest advantage has resulted from the employment of drachm doses of ipecacuanha, and the entire discontinuance of blood-letting in any form. This is shown by a comparison of the results so obtained in 1859 with these obtained from the ordinary treatment in 1858.

Pleurisy.—Dr. Robinson relates a case of asthenic chronic pleurisy, with an effusion of pus, which had proceeded to a much greater extent than the symptoms indicated. During its progress the case became complicated by an apoplectic seizure, terminating in paralysis. When the extent of the empyema was discovered paracentesis thoracis was performed, and a large quantity of pus was discharged. The patient died in a few days, and at the autopsy unsuspected disease of the kidney and liver was found; much pus still remained inclosed in an organized sac in the left pleura, the left lung being compressed to the size of a hand. The whole of the right corpus striatum was disorganized by softening and purulent deposit.

Surgical Reports from General Hospital, Chatham.—Inspector-General Taylor and Surgeon-Major Matthew report the particulars of cases of gunshot injury received during the late mutiny in India; as well as interesting instances of surgical operations performed at Fort Pitt, Chatham.

Determination of the Carbonic Acid and Watery Vapour in the Air of the Wards at Fort Pitt.—Two papers on this subject, by Dr. Gore, and Messrs. Godwin, Pilcher, and Walters (Medical Cadets), close the series of papers.

V. Two Lectures by Deputy Inspector-General Longmore, Professor of Military Surgery, at the opening of the Army Medical School in October 1860, are subjoined, as explaining the objects contemplated in the establishment of the School.

The papers selected for publication on the present occasion are few in number; but it is to be hoped, when it becomes known that such selection is to be made annually, a larger proportion of reports of sufficient interest and importance to justify their publication will be received from Officers of the Department.

I have the honour to be,

SIR,

Your most obedient humble servant,

HENRY MAPLETON, M.D.,
Deputy Inspector-General.

I.

TAILED HISTORIES OF TWO CASES OF APOPLEXY, OR THE APOPLEXY OF THE HOT WINDS, SELECTED FROM SEVEN CASES OF THAT DISEASE, WHICH OCCURRED IN HER MAJESTY'S 91ST REGIMENT, STATIONED AT KAMPTEE, CENTRAL INDIA, IN THE MONTHS OF APRIL, MAY, AND JUNE, 1859.

By M. MURPHY, Esq., *Surgeon, 91st Regiment.*

PRIVATE J. O., age 26, an Englishman; enlisted in 1854, ived in India October, 1858; a slight spare-built man of icate appearance; reported to have been in the habit of aking to excess for some days, and then of abstaining gether. Has had no serious illness since enlistment. nitted into hospital at 12½ P.M. of 25th May, 1859, comining of great pain in the head, referred to the forehead l vertex; tongue dry and furred; pulse full and rapid; n very hot and dry; bowels confined for two days. admission he was seen by the apothecary on duty, o administered an emetic, and after its operation 4 oz. the mist. sennæ; and cold was applied to the head. out 3 P.M. the purgative medicine operated twice. He , during the interval, lain tranquilly in bed, and had not n observed to get up to make water. On returning from stool the second time, about 3½ P.M., he was observed stagger, and on lying down in bed he commenced to an; the apothecary was immediately called, and found insensible; pulse very rapid, 140; the skin intensely ; pupils contracted and conjunctivæ injected; breathing id, labouring, and stertorous. The cold douche to the d was immediately used. At 4 P.M., on being visited, he found presenting the above symptoms, and in addition vulsive movements of the upper and lower extremities, l of the muscles of the neck. The skin was still very hot: cold douche was continued, a turpentine enema adminised, two drops of croton oil placed on the tongue, and apisms applied to the epigastrium and calves of the legs. ter continuing the douche for an hour, its use was suspended, skin having become cooler, and the bowels having been ely moved. The patient was moved into a dry bed, and placed in front of the therm-antidote; his head was shaved, and the acetum mylabris cichorei (the blistering fluid furnished in this Presidency) freely applied to the scalp and back of the neck; a spirit lotion was applied to the head; the thorax rubbed with camphorated spirit, and tea-spoonful doses of a mixture having 30 minims of spir. ammon. arom. in 1 oz. of mist. camph. were given. At 9 P.M., the pupils were dilated and insensible to light; pulse too rapid to be counted, though easily compressible; respiration 56, stertorous; heat of head and trunk increased; coma complete; spasms of the extremities and of the neck still continued. The head and trunk were sponged with cold water; the acetum mylabris again applied to the back of the neck and to the spine, and sinapisms repeated to the epigastrium and legs; the catheter was introduced into the bladder and about a pint of urine drawn off; the spirit lotion was directed to be kept applied to the head, and spirit. ammon. arom., in doses of 15 minims, to be given every half hour. He continued in the same state during the night, and died at 5·45 A.M. on the 26th.

Sectio cadaveris eight hours after death.

Head.—The brain presented a healthy appearance. The external veins were somewhat full, and the arachnoid membrane was slightly opaque. No clot nor effusion of serum in the ventricles.

Thorax.—With the exception of slight congestion of the posterior portions of both lungs, probably the result of gravitation, the contents of this cavity were healthy.

Abdomen.—A large patch of vascularity was found at cardiac extremity of stomach. Other viscera healthy.

Lance-Corporal W. H., age 31, an Englishman; enlisted in 1846, arrived in India in October, 1858; 5 feet 11½ inches in height; slight make; dark hair and eyes; reported to be of temperate habits; had served at the Cape of Good Hope and in the Mediterranean; had not suffered from any serious illness since enlistment; was admitted into hospital on 31st May, 1859, and is thus reported on that day:—Was brought to hospital at 8 A.M. this morning, complaining of pain in the head, oppression of the chest, and nausea; had been employed during the morning as barrack orderly: had marched the sick and convalescents to the hospital, and back to the barracks, a distance of one mile each way; had got back to the barracks before 7 A.M., the sun being then hot, but not oppressively so. When in the barrack square he felt ill, and, on coming to the hospital, he was seen by the pothecary on duty (the medical officers having left at o'clock A.M.), who reports that he had a hot skin and quick ulse, and that he complained as above. He was placed in bed, a emetic of ipecac. pulv. was given, and, after its operation, grains of calomel and 4 oz. of the senna and magnes. sulph. ixture. A cold lotion was applied to the head. He mained in bed during the day; bowels were moved twice, it he was not noticed by the patients in the beds next him get up to make water. He slept during the greater rt of the day. At 6 P.M., there being then, as had been the se during all the day, a very hot wind blowing, with the ermometer in the wards of the hospital at 96° Fahrenheit, his returning from the water-closet he was observed to agger, and, on lying down in bed, he screamed, and mmenced talking incoherently. This being the hour of ening visit, he was immediately seen by me, and found ith an intensely hot skin—the true calor mordax; pulse 120, ll and bounding, but easily compressible; respiration 40, nd with much heaving of the abdomen; eyes fixed and rominent, pupils in a medium state of contraction. He was once removed, in his bed, to the verandah of the hosptal, nd the cold douche applied to the head and chest. On being oken to loudly, he answered in a wavering uncertain anner, and continued to do so for some fifteen minutes er the seizure, after which he manifested no sign of aring when spoken to. During the continuance of the uche there was convulsion of the upper and lower extremis, and the respiration appeared to be entirely abdominal, brachial, femoral, and carotid arteries, and the abdominal rta, also pulsating strongly. Pupils continued in the edium state, and the eyes fixed and prominent; face, ich had been slightly livid, became pale. The douche s continued for one hour, the water being poured in a full eam from a watering pot by a man standing on a chair, d who raised his arms to a height of five feet above the ad of the patient. During the continuance of the douche e heat of the head and trunk became reduced, and the lse fell. After about twenty minutes of the douche apisms were applied to the epigastrium, and to the lves of the legs; a turpentine enema was administered, o drops of croton oil were placed with a feather on the ck of the tongue, and the catheter was introduced into the adder, and about six ounces of urine drawn off. At the piration of an hour he was placed in a dry bed, and moved front of a therm-antidote; the hair was cut close all over e head, and a spirit lotion applied to the head and chest, the evaporation of which was assisted by the current of air from the therm-antidote, and 10 minims of spir. ammon. arom. in 1 drachm of mist. camph. were administered.

I visited him again at 9 P.M., and found him in profound coma. Bowels had been moved once scantily; skin was again very hot and dry; pulse fuller than before and more resisting; respirations 40. There were convulsive twitchings of the upper and lower extremities, and the abdomen was tympanitic. Twelve leeches were applied to the occiput, a second turpentine enema was administered, the spirit lotion to head and chest continued, and frictions of oil and turpentine made over the abdomen. The spir. ammon. arom. was continued as before.

June 1.—At visit, at 20 minutes before 6 A.M., he was found lying on his side, breathing tranquilly, and conscious. Pulse 84, and soft; skin cool. He complained of pain of the abdomen; no pain of head; eyes natural; bowels had been freely moved twice after the enema; the leeches had bled freely. At 12, midnight, he had recognised his brother, a soldier of the regiment, who had been sent for to attend on him, to whom he had spoken, asking him "what it was he was doing to him." He complains of thirst; has made water this morning; abdomen is still full and slightly tympanitic. Had some tea brought, which he drank readily. Turpentine fomentation was applied to the abdomen, and effervescing draughts, with spirit. lavand. co. and spir. ammon. arom. were given every second hour, with sago, tea, lemonade. In the evening he felt better; had no pain of head; had made water, but not frequently; bowels were moved once; pulse 84; skin cool; respirations 20.

On the following day he was much improved; had slept; the tympanitis of abdomen had subsided, and he only complained of soreness of his legs from the mustard plasters. Subsequently, the integuments of the calves of both legs sloughed, but he gradually gained strength, and was discharged from hospital quite well on the 28th June, and has, up to this period, 1st August, 1859, continued at his duty. He stated that he had no recollection of what occurred from his return from the water-closet, at 6 P.M., to 12 at night, when he recognised his brother.

II.

REMARKS ON SOLAR APOPLEXY.

By DR. R. C. TODD, *Surgeon, 99th Regiment.*

THIS disease has generally been termed *sun-stroke,* a term which is, in my opinion, highly objectionable, not only because the direct influence of the sun is not necessary for its production, but also, because it is liable to mislead the practitioner. I am disposed to regard it as an aggravated form of heat fever, in which the effect of heat is manifested not only in the brain, but in the lungs, heart, liver, spleen, and kidneys, which vital organs are choked up and their functions suspended, although the formidable head-symptoms most especially attract attention. In one case which came under my observation, almost from the very beginning, the lungs were gorged with fluid, and the patient was literally suffocated; and at the post-mortem examination every internal organ was found to have participated in the same engorgement. Since the arrival of the 99th in India, six cases of this disease have proved fatal, four of them being non-commissioned officers. They were all men of 34 years of age and upwards, and three of them were men whose habits, to my knowledge, were intemperate.

In none of these instances was I enabled to ascertain the existence of that frequency of micturition noticed by Deputy Inspector-General Longmore in similar cases; but such a symptom might have been expected from the intensely dry state of the skin which was present in every case, the kidneys performing part of its function, and frequent micturition being the result. In two cases the kidneys became so highly congested that hæmaturia occurred. In the first case, that of a boy 16 years of age, who had exposed himself, while drying some clothes, to the direct influence of the mid-day sun. Head-symptoms supervened in the evening. He passed no water for a couple of days, and when the discharge was re-established, it was intimately mingled with blood. This boy recovered. In another case the patient was upwards of 34, of temperate habits, and the symptoms were those of deep coma, but without stertorous breathing, the respiration being quite easy. As he passed no urine I introduced a catheter, and drew off, on two separate occasions, about six ounces of bloody urine. This man died; and the state of congestion which I have already mentioned was observable in all the organs, with the exception of the lungs, which were perfectly healthy.

In another patient, a strong young man, hæmaturia also occurred. He came to hospital complaining of the usual symptoms of the prevailing fever, and was treated by mild purgatives and diluent drinks, calculated to produce diaphoresis. He recovered; and as he approached convalescence his urine became very bloody. He experienced a sensation which he described as that of a fluid running down the course of the left ureter, and, afterwards, a desire to micturate. A single full dose of quinine arrested the hæmorrhage, which, however, returned on the following day, but was finally removed on the administration of purgatives. In the early stage of this affection I would be inclined to advise the administration of a very full dose of quinine, with the cold douche, and stimulants; and in no case, to my mind, is depletion by leeching or venesection advisable.

III.

REMARKS OF DR. BARCLAY, 43RD LIGHT INFANTRY, ON SUN-STROKE, IN HIS REPORT FOR 1858-59.

FOR a long time before the occurrence of the first case of sun-stroke, every one in camp had suffered more or less from prickly heat; the severity of that troublesome affection being, as a general rule, in proportion to the amount of perspiration from each individual. When the heat of the weather became more intense, one of the first symptoms of its producing an injurious effect was the gradual disappearance of the cutaneous eruption, the skin getting rough and scaly, and perspiration ceasing, at the same time that the bowels became obstinately constipated. The appetite soon failed almost entirely; a feeling of nausea was generally complained of; the urine was rather copious and limpid, and the calls to pass it frequent; sleep was, from the first, much interrupted, and soon became almost impossible; vertigo was frequently complained of, but headache rarely. In fact, as a general rule, there was no complaint of pain. What the men complained of when they came to hospital, or fell out on the march, were extreme debility and weariness, prostration on any exertion, vertigo, and nausea, and in many cases more or less incontinence of urine, more particularly after exposure to the sun. The pulse was, for the most part, frequent, sharp, and rather small.

From these symptoms, or, at all events, from some of them, almost every one who was exposed to the intense heat at the foot of the Punnah Ghaut, in the end of May 1859, suffered in a greater or less degree. If, therefore, these symptoms are to be considered premonitory of sun-stroke, inasmuch as no one became the subject of that affection who had not previously suffered from them, it must be kept in mind that they prevailed in a very much larger proportion of cases in which the symptoms of that affection did not supervene. I look upon them rather as predisposing to sun-stroke than as being premonitory of it, in the usual sense of the term. There can be no doubt as to the treatment appropriate for these cases. Rest, cold sponging of the body, cold applications to the head, regulation of the bowels, saline diaphoretics, or removal to a room or tent cooled by wet tatties, and, if necessary, by a therm-antidote, are the remedies indicated; but, as we were circumstanced last year, the last, which is by far the most important part of the treatment, was, of course, quite out of our reach. Very many of the less severe of such cases were not admitted into hospital at all. The hospital tents afforded no better protection from the heat than those occupied by the companies. Rest was provided, as far as was possible, by allowing the men who complained to ride in the sick carts, and the necessary medicines were given in camp.

The subjects of sun-stroke were, for the most part, and especially at first, some of the stoutest and most muscular men in the regiment. A large proportion of them were certainly men who, at some former time, had been addicted to intemperate habits, but this rule was by no means universal; and, from the circumstances in which the regiment had been placed, none of them for the previous three or four months, had any opportunity of indulging habitually in intoxicating liquors. It was very evident, however, that men who had injured the tone of their nervous system by intemperance were much more liable than any others to sun-stroke. That all were greatly predisposed to it by the exhaustion produced by the previous march, there cannot be any doubt. I saw no reason, however, to suppose that alarm acted at all as a predisposing cause. Even at the time when deaths were most frequent, there was no sign of any feeling of the kind among the men. The attacks of sun-stroke came on, with very few exceptions, when the men were in their tents; generally during the day, but in several instances during the night; never, except in one instance, on the line of march. Most of them were sudden. The patient had generally been lying in his tent, often seemingly asleep. Sometimes the attention of his comrades was first directed to him by his stertorous breathing, and, on an attempt being made to rouse him, he was found to be insensible. In other instances, he started up and endeavoured to escape from the tent, staggering about, and struggling violently when laid hold of, evidently much alarmed, and anxious to escape from some imaginary object of terror, but in a very few minutes becoming insensible. In a few cases, in which the patient had come to hospital himself, or with the assistance of a comrade, complaining of the symptoms before mentioned, viz., debility, nausea, vertigo, incontinence of urine, &c.; insensibility and the other symptoms of sun-stroke gradually supervened; but such cases were not numerous.

The symptoms of sun-stroke, when the disease was fully developed, were very constant and regular. The patient lay on his back, without sense or motion, breathing rapidly, and, as death approached, more and more stertorously; his eyes, fixed and slightly turned upwards, becoming gradually more glassy, the pupils greatly contracted, the conjunctivæ of a pink hue, gradually becoming deeper; his face pale; the skin dry and burning to the touch; the heart's action very rapid and forcible, the impulse being perceptible from a considerable distance; the pulse frequent and sharp, but not strong, giving the idea of a thinner fluid than blood circulating beneath the finger; frothy mucus, sometimes clear, at other times of a brown colour, was, in most instances, ejected from the mouth and nose, and often in large quantity. If the disease did not yield to treatment, the heart's action soon began to fail, the pulse became fluttering, the breathing more stertorous, and, in a period varying from a few minutes to a few hours, death closed the scene. A comparatively small number of cases were, from the first, attended with convulsions. These generally began in the upper extremities, and in some cases they did not extend further, the patient either becoming rapidly insensible or recovering. In many cases, however, they extended to the whole of the voluntary muscles, and were of the most violent description, ceasing frequently for from two or three to fifteen hours, and again returning.

In a few instances, the nervous irritability was quite as much increased as in hydrophobia. In some of these the patient, as far as his mental faculties were concerned, seemed to be in a state, in some respects, analagous to somnambulism. Although, to a great extent, unconscious of what was going on about him, and quite incapable of understanding or answering a question, his whole appearance was indicative of the greatest terror, and a few drops of water found on the ground near him were sufficient to throw him into the most violent convulsions.

In the majority of these cases, coma supervened before death, but in a few of them the convulsions continued to the last, and death took place while the body was contorted by them. They were not confined to any one set of muscles.

The view I took of the pathology of the disease was, that in the first instance it was entirely a nervous affection, implicating, however, the sympathetic as well as the cerebro-spinal system; that it was brought on entirely by the over-stimulation of intense heat, and that the vascular system was only implicated secondarily.

It is needless to speculate as to the nature of the affection of the nervous system, while we remain in ignorance of the minute structure and mechanism of that system, but it is evident that the change in it which produces these symptoms is at last a sudden one, and that there is a disturbance of some equilibrium which is beyond the reach of our senses. The disease, I believe, could be produced as easily and as certainly by exposure to artificial heat as by exposure to the heat of the sun. That direct exposure to the sun, at all events, is unnecessary for its production, we have had ample proof, only one case having occurred during such exposure; but at the same time there cannot be the slightest doubt that the cases would have been much more numerous, had not every precaution been taken to prevent the men from being so exposed. There can be no doubt that the extreme degrees of the hot winds render their effects very enervating, and that by so doing the tendency to sunstroke must be increased. Of the effect of exposure to an equal temperature, in a damp atmosphere, however, I have had no experience.

The treatment which I adopted in all cases of the disease was based upon the view which I had taken of its pathology. Venesection was considered wholly inadmissible, and was never employed. The patient was stripped of his outer clothing (if he had any on) as soon as possible, placed in a sitting or semi-recumbent posture, and the cold douche applied, from a height of three or four feet, to his head and along his spine and chest, his extremities being, at the same time, sponged with cold water. The effect of this treatment had to be carefully watched. In many instances, consciousness was speedily restored by it; the first symptoms of convalescence being, generally, relaxation of the pupils; but it had frequently to be repeated several times, on account of a return of insensibility.

In a considerable number of cases it had to be discontinued altogether, in consequence of its occasioning failure of the circulation, and in such cases the application of cold to the head was all that could be subsequently borne. After the employment of the douche, a large blister was in all cases applied to the nape of the neck, and this remedy frequently produced the best effects. In several instances coma recurring after an interval of ten or twelve hours, was completely removed by the application of a second blister to the vertex, and in a few cases the remedy had to be repeated still oftener. A purgative enema was also generally given after the employment of the douche, and it had often to be repeated several times before any effect was produced on the bowels. Sinapisms were applied to the extremities in most cases; occasionally a few leeches were applied to the temples, with the view of relieving congestion, but I cannot say that I ever saw much good produced by them. As a general rule, no medicine could be given by the mouth, as the patients were incapable of swallowing; but in the slighter cases, or in those seen at a very early period, a stimulant was sometimes given, and a purgative always. Benefit was certainly derived from stimulants occasionally, especially in those cases in which the pulse was extremely small and weak; but it appeared to me that the stimulant should always be a mild one, and be repeated if necessary. No effect seemed to be produced by stimulant enemata.

During convalescence, the treatment consisted in careful regulation of the bowels, which were always inclined to be constipated, the employment of saline diaphoretics and small doses of quinine, and the administration of an opiate at night in those cases in which sleeplessness continued. The skin frequently remained dry and the pulse rapid for some days, and the patient had often a heavy look for a still longer period. In a few cases there was congestion of the conjunctivæ and copious serous discharge, which continued for some days after all other symptoms of the disease had been removed. After having witnessed the uselessness of the ordinary remedies in several of the convulsive cases, attended with the extreme nervous irritability above described, I was induced to try the effect of the inhalation of chloroform. The result was highly encouraging. After a few inspirations the convulsions ceased, and, as a general rule, sleep was very easily induced. In a few cases certainly, after a considerable interval of consciousness, coma supervened, and was followed by death; but I am satisfied that in some instances life was saved by this remedy, and that in all in which it was employed, life was prolonged. The cases, however, in which it can be employed are comparatively few, and further observations on the subject are required. There can be no doubt that the chief cause of the want of success in the treatment of sun-stroke, is the extreme rapidity with which the diseased action progresses. Unless an impression can be made on it at once, treatment is of little avail, and many patients when first seen are in a hopeless state. Could the cold douche be applied at the moment when the symptoms are first felt, the mortality from the disease would, I believe, be very small indeed; but this, so far as a body of men in the field is concerned, must of course always be an impossibility.

The movements of the regiment during the period at which these casualties occurred, were confined entirely to Central India, and in a great measure to Bundelcund. The features of that district, or at all events of that portion of it through which we passed, are the following:—It consists of a central elevated plateau, for the most part of "cotton soil," watered by numerous small streams, and broken by many detached ridges of considerable height, and with a belt of low and level country running round the circumference of the former, on the north and east. On the south, the descent to the lower country is gradual; but on the north side it is abrupt—a steep range of hills covered with jungle separating the two districts, and only admitting of a passage from the one to the other at a very few points. The ghaut by which we descended, viz., that at Bisramgunge, near Punnah, is said to be the worst of the whole. More to the eastward, at Kallinger, there is an admirably constructed road by which, on our return, we ascended without any difficulty. The extreme difference in height between the two districts is probably fully 1,500 feet. Between Jubbalpore and Banda there are two ranges of hills, the one that already described as bounding the elevated district on the north, the other parallel to it within about twenty miles of Jubbalpore: these ranges are everywhere covered with jungle. The central part of Bundelcund, however, is elsewhere very free from it. From the northern range, spurs run down for a considerable distance into the lower district, and it was between two of these that our march lay after we descended the ghaut near Punnah.

In the lower district there are here and there a few detached rocky hills of no great height, but the country, generally speaking, is very flat, especially towards the north. From the time that we left Banda until our return, we never saw any rising ground of more than a few feet in height. The soil of this district, which is very deep, is nearly everywhere of the "black cotton" description so common in Central India, fissured in all directions in the hot season, and in the rains little better than a quagmire. It is, however, of great fertility, and is everywhere so highly cultivated, that in September and October, when the crops were on the ground, we had often difficulty in finding sufficient clear space for the encampment of a few hundred men. These crops were also so luxuriant, that in many places men mounted on camels could not be seen at a few yards distance in them. The climate of this district is an extremely trying one. The hot season may be said to begin in March, and the hot winds set in in April. The direction of these hot winds is, for the most part, westerly. In the neighbourhood of the hills, in particular, they frequently shift to other points, and some of the hottest winds that we experienced were easterly. These winds blow, with scarcely any intermission, day and night, and their influence on the men living in tents and marching every day, was most exhausting. The face of the country becomes speedily parched by them, and the soil cracks and yawns in fissures sometimes yards deep. The heat of last season was very unusual, and is said to have been greater than had been experienced for twenty-five years, very little rain having fallen during the previous cool season. The heat, especially at Punnah, was almost unbearable; withering hot winds blew with scarcely any intermission night and day, and while encamped for four days in a narrow ravine, which military reasons prevented us from leaving, the heat exceeded anything that we had ever experienced. During the day the thermometer varied from 115° to 118° in the largest tents, and in the smaller ones it reached 127°, and in the middle of the night I once observed it standing at 105°. So overpowering was the temperature, that even the native followers were dropping down from sun-stroke, and in some instances dying in less than an hour.

It is somewhat difficult to form an estimate of the mortality from sun-stroke in proportion to the number of cases of the disease—the line between it and simple fever is so ill defined—that probably no two medical officers would classify a number of cases in the same way. If the term sun-stroke were to be confined to those cases in which there is complete insensibility, the number would be greatly limited, and the mortality would considerably exceed one in two. If, on the other hand, all cases were to be included in which vertigo, nausea, prostration, and dribbling of urine are present, and clearly attributable to the heat of the weather, the number would be greatly increased, and would include not only numerous cases returned under the head of Febris c. c., but very many more which are never admitted into hospital at all. I am disposed to steer a middle course, by classifying under the head of Ictus Solis, all those cases in which insensibility, more or less perfect, or convulsions, were present; and under the head of Febris c. c., all those in which these symptoms were absent; and in doing so, I have been guided by the belief that the two classes of disease differ not only in degree, but in nature. Adhering to this view, the number of cases of sun-stroke admitted during the year was 111, the strength being 1,004, of which 44, or 39·63 per cent., proved fatal, and 67 recovered. The greatest mortality occurred in the months of May, June, and July, during which period the men were harassed with long marches, and their vital force much impaired.

IV.

ABSTRACT OF A PAPER BY DR. MASSEY, 2ND DRAGOON GUARDS, ON ACUTE DYSENTERY, REFERRING ESPECIALLY TO ITS TREATMENT BY LARGE DOSES OF IPECACUANHA, IN THE REGIMENTAL HOSPITAL OF THE ABOVE CORPS DURING THE YEAR 1859, IN OUDE.

THE etiology of dysentery in India has excited much attention and discussion, and there are few questions in connection with this disease more worthy of consideration, especially when directed to the practical point of indicating prophylaxis. The ordinary division of causes into predisposing and exciting seems the simplest and most definite. The former may be said to be altogether unavoidable, whereas some of the latter causes may, to a certain degree, be guarded against. The predisposing causes are chiefly to be referred to the degree of unsuitableness of the individual European constitution to the climate of India,—often to a short residence in the country not having provided a condition of acclimatization.

The exciting causes of dysentery in India are very various; but the principal I believe to be connected with variations in temperature, which, by checking perspiration, induce vitiated secretion and internal congestions. These influences are chiefly felt in the Bengal Presidency during the hot winds, especially in the rainy season of September and beginning of October. During the prevalence of these hot winds, soldiers wear little clothing, constantly discarding flannel-belts, &c.; and while in a profuse perspiration, they lie down in a draught; the wind, even though it may be hot, acts coldly upon the wet calico clothing, and bowel complaints or fever result. Soldiers are incautious as to what they eat, occasionally indulging in the use of melons, cucumbers, &c.; but it certainly has never appeared to me that irregularity in food in India was much connected with the induction of dysentery. The diet of the soldier in India is more varied than in England; and though the meat is not so nutritious, it is still good and abundant; and the variety in cooking, as well as the care bestowed by the native cooks upon this essential point, vastly exceeds that practised for soldiers in England up to the period of my leaving home, in 1857. It does not often happen that soldiers eat too much. It seems a wise provision of nature that the relaxation produced by the climate on the European constitution much restricts the appetite and limits the desire for food to the power of digestion and requirements of the system.

It appears to me that yielding to thirst, and drinking large quantities of water, is much more a source of derangement of the bowels amongst soldiers in India than any irregularity in food. They drink often enormous quantities of water by day and night; and it is difficult to conceive that this can at all times be entirely eliminated by the kidneys and skin. In many parts of India the water abounds in salts, and is capable of exerting, when taken in great quantity, a laxative effect.

In the same manner as other diseases which prevail epidemically in India, affections of the bowels may exhibit in different years, in the same locality, variations both in extent of invasion and seriousness of type and mortality. Many men of experience recognize a malarious origin of dysentery, but as yet I have not seen cases that have satisfied me on this point; on the contrary, my experience would tend to show that malarious fever and dysentery often prevail at different times, and that a great increase of the one may not be associated with an increase of the other. I have often observed, in an attack of intermittent fever, a local determination to the mucous membrane of the bowels similar to the determinations so frequently engaging the liver or spleen, and in a similar way ceasing for the time with the intermission of the paroxysm before remedies have been used, bearing the character of a mere local congestion or determination during a paroxysm, and not a specific disease.

A contagious origin of dysentery has not been observed in the hospital of the 2nd Dragoon Guards. The dysenteric patients were located in the same wards with other sick; and no spreading of the disease occurred amongst these. Often the enema syringes used in such cases were indiscriminately employed, but no instances of contagion resulted. At the same time, it is not attempted to establish the doctrine from such a limited experience, that dysentery is never contagious or never has a malarious origin.

The symptoms of acute dysentery are so unmistakeable, and at the same time there exists so much similarity between cases, that, though there are distinct and important appreciable differences, still it does not seem to me necessary to consider these in detail. No doubt the character of the motions, seat of pain, type of the disease, presence of dyscrases or not, as well as the consecutive changes, are all of vast consequence in the prognosis and usually in the treatment; yet, as the system of treatment exclusively practised by me in the year 1859 was identical in all, it will suffice to allude alone to special symptoms in connection with the general consideration of the subject, and as a means of distinguishing between diarrhœa and dysentery. Pain was often referred to the situation of the caput coli, or to that of the sigmoid flexure, and sometimes the entire abdomen was implicated. It was nearly universally increased by pressure on the abdomen; and it was very seldom, except, in the very commencement of dysentery, that this symptom was absent. In fact this is, next to the state of the dejections, one of the most distinctive characteristics in the diagnosis of dysentery from diarrhœa. It is noticeable that the full pulse and fever observed in the acute dysentery of Europe are by no means so marked in India. Often the pulse is increased in frequency, and the skin hot and dry, but these conditions to any marked degree are much less commonly met in acute dysentery in India than would be deemed likely to be the case, considering the usual age of soldiers. As the case advances, more serious symptoms are presented, the pulse and the skin becoming more appreciably affected, and pain in the abdomen and tenesmus being usually associated. It may also be remarked, that in the passage of bilious motions, or very vitiated secretions without the presence of dysentery, there may be very great tenesmus. Nevertheless, it is said, and I believe with truth, that the presence of the latter symptom to any great extent is very characteristic of the disease engaging the lower part of the bowel, the sphincters being directly or sympathetically affected. I think I have verified this in previous years by pathological investigation. When, however, a case of acute dysentery is presented for treatment, the never-failing guide to the nature of the disease is the character of the dejections. Other symptoms and signs may be deceptive, but whether the motions be slime, or slime and blood mixed with other vitiated secretions containing scybalæ or not, the alvine discharge is to the experienced, pathognomonic of the true nature of the disease.

I now come to the consideration of the most important question of all, namely, the means of cure. The system of treatment exclusively pursued in all cases this year has been that previously brought to the notice of the profession by several writers. This system of treatment may be said to consist of the exhibition of large doses of ipecacuanha. Mr. Docker, Surgeon, 7th Fusiliers, pursued this practice in the Mauritius,* and from the date of his cases this remedy appears first to have been adopted by him in 1855.† Speaking of his success, he says, "in all constitutions, robust as well as delicate under all circumstances, the result is the same;" and here, as far as my experience of acute dysentery goes in this country, I feel almost justified in endorsing his statement by using similar language.

In nearly every case of acute dysentery, when first seen, half an ounce of castor oil is at once given, with a view of clearing out scybalæ and vitiated secretions. As soon as the oil has freely acted, say in from four to six hours, a drachm of ipecacuanha is given in a little water, a mustard plaister having been applied to the stomach about half an hour previously, at which time, likewise, thirty drops of laudanum are given. Mr. Docker's view on this point seems to be that the mustard plaister and laudanum tend to enable the stomach to retain the ipecacuanha. I regret to be at issue with him in any portion of his remarks, but I have not found the same tolerance of the stomach for large doses of ipecacuanha that he seems to have experienced. I sometimes have encountered difficulty in this respect; but it seldom happens, I imagine, that the entire drachm can be thrown up, even when sickness is quickly induced. When one dose is rejected I usually give a second soon after; this generally succeeds, but if not, by waiting a few hours the object is often readily effected. If great sickness and retching are caused by the medicine when given in fluid, it is often retained if given with a little opium in five grain pills, three or four at a dose; and two or three drops of hydrocyanic acid, given a little before the ipecacuanha, often assists its retention. I have likewise exhibited it frequently in the form of infusion in enema with tinct. opii, but I am not satisfied that I have seen very marked benefit from this mode of exhibition. It has commonly been as an adjunct to medicine given by the mouth. I have no case to record of treatment solely by enemata of ipecacuanha. The ingenuity of the prescriber may be taxed to provide that a sufficiency of the drug be retained, but by a little management it has hitherto always occurred to me to succeed. I have noticed that intolerance of the stomach to large doses of ipecacuanha was more frequently encountered in weakly men than in the more robust; and when dysentery had existed for a few days there has been less power in retaining the, medicine than in cases submitted to early treatment. Mr. Docker's statement to the effect, that if the medicine is retained for even a quarter of an hour before sickness is induced, it seems to exert its beneficial influence, is to be borne in mind. This, doubtless, results in a great measure from the circumstance that only a portion of the ipecacuanha is thrown up. Whenever tolerance from the first prevailed, a speedy cure, thorough and complete, was the result.

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* "This medicine (ipecacuanha), brought from the Brazils by Piso (*Waring's Manual of Therapeutics*, p, 221) towards the end of the 17th century, was given by him in dysentery in drachm doses, in the form of infusion. It was in more or less use throughout the 18th century, and about the middle of the century was much esteemed by Sir John Pringle, who gave it sometimes in scruple doses, at others in five-grain doses, three or four times at intervals of two or three hours. Mr. Mortimer and other medical officers of the Madras army, upwards of thirty years ago, thought highly of it, and used it freely in scruple doses, combined with powdered gum-arabic. Still more lately, Mr. Twining advocated its use in doses similar to the smaller ones given by Sir John Pringle. Haspel also combines ipecacuanha in full doses with calomel in the early stages of the disease."—*Clinical Researches on Diseases in India*, by Charles Morehead, M.D. (1860), p. 298.—H.M.

† *Lancet*, 31st July and 14th August, 1858.

In cases of acute dysentery the effect of one or two large doses of ipecacuanha is usually to produce one or two feculent motions, and the disease terminates. There is in general no gradual alteration of secretion or other symptoms, the disease seeming simply to end; confinement to the recumbent position for a day or two and farinaceous diet are alone necessary; pain, tormina, tenesmus, procidentia ani, blood, mucus, jelly-like secretion, all cease; the appreciable action of the medicine, being a few bilious loose motions. But in some instances the ipecacuanha does not act so speedily, or with such decided benefit, and its exhibition at stated intervals may be necessary for two or even three days. Not infrequently the intolerance of the stomach for the medicine prolongs the treatment.

Again, though the dysentery is cured, a degree of looseness of the bowels may continue for a short time; and in cases where dysentery has prevailed for some days before treatment is sought for, the cure is usually somewhat protracted. I have also seen occasionally a troublesome symptom continue, I allude to the formation of scybalæ. This tendency, or at least the condition that creates it, is so liable to lead to the invasion of fresh symptoms of acute disease, that, as long as it lasts, it is always to be watched and prescribed for; but, as has been before observed, the remedy finally succeeds.

The following abstracts of two cases from the Hospital

Register may be taken as ordinary examples of the disease and the efficacy of the remedy:—

Private James Scott, 2nd Dragoon Guards, aged 27, a Scotchman; a moulder by trade; of temperate habits; a stout made man. Service, four years and eight months, of which, in India, one year and six months.

May 3rd, 1859.—Came to hospital this morning with purging of slime and blood, unmixed with fæces. He says he has great pain in the abdomen, and intense straining when at stool; the purging has existed for two days. His countenance is sunken and anxious; tongue whitish, pulse 90, weak. The pain in the abdomen is increased much by pressure, but is diffused. It is greatest, however, over the descending colon. To have half an ounce of castor oil. After six hours a sinapism to the abdomen, and to take a draught of half a drachm of tinct. opii at the same time. Half an hour after this, to have a drachm of pulv. ipecacuanha in water. The ipecacunha to be repeated, if necessary.

Vespere.—Bowels freely moved by the oil several times; has retained the ipecacuanha on the stomach.

May 4th.—Is much better to-day; bowels but twice moved since he took the ipecacuanha; both motions large, thin, and feculent, the last containing neither slime nor blood; no pain in abdomen; pulse 80; no medicine; arrowroot.

5th.—Convalescent.

13th.—Has been quite free from dysentery since the 4th. Discharged to duty.

Sergeant John Page, 2nd Dragoon Guards, aged 28, admitted on the 18th July, 1859. Is a tall, well-made man; service ten years, of which, in India, one year and nine months. States that he has been purged for the last three days, that he has but slight pain in the abdomen, and very little straining when at stool. He says his motions are natural, with the exception of being thin. Pulse regular. To have chalk mixture with tinct. opii frequently during the day. A mustard plaister to be applied to the abdomen.

19th.—He continues to be purged. On looking at his motions they are distinctly dysenteric, consisting of but little fæces, mixed with slime and blood. He complains of pain in the abdomen, increased by pressure, and chiefly referred to the lower part of the descending colon and sigmoid flexure. He likewise suffers from straining when at stool. Countenance anxious and sunken; pulse small, 85; appetite bad. To have a dose of oil, and in the evening a drachm of ipecacuanha in the usual way.

20th.—Had not long taken the ipecacuanha last night before it made him very sick. Purging continues, bowels moved nearly every half-hour; motions contain more blood and slime than yesterday. Complains much of straining when at stool. To have two draughts of ipecacuanha during the day, preceded in the usual way by mustard plasters to the abdomen, and draughts containing tinct. opii, likewise to have two enemata of ipecacuanha with tinct. opii.

21st.—On each occasion yesterday, kept the ipecacuanha down for some time before sickness was induced. Did not retain the enemata long. Is still a good deal purged; motions very offensive, consisting almost exclusively of slime and dark blood with shreds of lymph. Suffers much from procidentia ani. Pulse 110, and small. Is very weak. Haustus oleosus.

Vespere.—A large cast of the bowel, about four inches long, came away at stool to-day. He, however, passed one or two large free feculent motions. He says the pain in the abdomen is much less. Pulv. ipecac. gr. xx, pulv. opii gr. j, to be made into four pills, and taken at one time.

22nd.—Retained the pills; bowels only once moved since the cast of bowel came away; motion natural; is much better. The pills as last evening, to be taken twice to-day.

23rd.—No medicine.
24th.—Has not been to the stool since the 22nd.
26th.—Says he feels quite well. Bowels moved by oil.
28th.—Convalescent.
August 8th.—Discharged to duty.

Time was lost in the treatment of this case, as it was believed at first to be one of diarrhœa only; nor until the motions were examined was the true disease recognized. Sergeant Page has continued quite well up to the date of this report, the 1st of January, 1860.

Numerous cases might easily be quoted from the Hospital Register, but it will probably be deemed equally conclusive to present two short returns, the one embracing the period included by the General Return of 1858, and the other that of the year 1859. In the year 1858 the ordinary treatment practised in India of late years was pursued, consisting chiefly of leeching, preparations of mercury with small quantities of ipacacuanha, opiate enemata, counter-irritants, &c. In the year 1859, the treatment was exclusively that by large doses of ipecacuanha. In 1858, 103 cases of acute dysentery were admitted into the regimental hospital, 7 of chronic, and 5 cases remained over from the previous year, making in all 115. Of these, 14 died, and three were invalided to England, being a loss to the service of something less than 1 in 6 from deaths and invaliding. In 1859, there were admitted 115 cases of acute dysentery, 3 of chronic, and 2 remained over from the previous year, giving a total of 120 treated. Of these, two died and none were invalided, causing a loss to the service by deaths and invaliding of 1 in 60. The return of 1859, therefore, shows a great contrast with that of the previous year, and still more is it deserving of notice, from the fact that of the two deaths recorded in 1859, one occurred in a thin weakly man who had frequently suffered from dysentery before, and the second, though included in the return as dying under the head of acute dysentery, actually died suddenly from heat apoplexy when a patient in hospital for the former disease.

How, then, does this medicine act? A feasible idea appears to be that the portal system is relieved by action upon the liver and small intestines; the free feculent bilious motions would argue this, but then the portal system can be relieved in other ways, yet the dysentery remain uncured. Leeches to the anus will unload the vessels to some degree; mercurial purgations often produce a cholagogue effect, which would tend to relieve the portal circulation; yet these means do not cure dysentery as ipecacuanha does.

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Dr. Corrigan, of Dublin, has pointed out the value of ipecacuanha in emetic doses in jaundice. Considerable experience has convinced me of the truth of Dr. Corrigan's statements on this subject, but I have long held the opinion that the ipecacuanha exerted other influence than the mere mechanical effect of an emetic. It appears to me, that no other means so effectually or so speedily produce an action on the liver and small intestines as ipecacuanha, in large doses, without inducing other deleterious effects. Mercury, it is true, acts as a cholagogue, but it also often acts as a drastic purgative. It irritates the inflamed mucous membrane.

In addition to the effects of ipecacuanha just mentioned, it seems to be powerfully sedative. It lowers the pulse and induces diaphoresis, possibly by the nausea it creates. Possibly, in a similar way, may be produced its influence upon the peristaltic action of the bowels, which is often the most remarkable immediate effect. Frequent purging and straining are allayed on taking ipecacuanha, often as soon as one large free motion occurs. It is difficult to suppose that the entire power of the medicine is expended upon this secretion, or that a single motion could give rise to such immense results, unless there was some marked sedative action.

It may be observed, that several subjects connected with dysentery have not been considered in this paper. In the first place, no notice whatever has been taken of chronic dysentery, for the reason that but three slight cases were admitted. They were more properly instances of subacute disease, occurring in men who had, several times previously suffered from dysentery. It is very remarkable that the condition, only second in seriousness to a fatal termination, the lapsing of acute disease into chronic, has been unknown under this treatment. Judging, however, from a pretty extensive experience of chronic dysentery in other years, and from numerous examinations after death, I should be sceptical of the power of ipecacuanha in this condition, if severe. But, under the circumstances of a prolonged dysenteric state, where serious disorganization had not yet taken place, I should not hesitate, even for weakly men, to prescribe ipecacuanha in large doses, and would expect decided advantage. It has, however, been stated to me, by my friend Dr. Brougham, at one time surgeon at the field hospital in Lucknow, that, after several trials, he could not make a favourable report of the remedy in the advanced stages of chronic dysentery.

No remarks have been directed to post-mortem appearances, as, of the only two fatal cases, one died in the field when the regiment was in pursuit of the enemy, and it was not possible at the time to make an examination. In the second, the man died of heat apoplexy suddenly, and, though an abnormal state of the mucous membrane was found, still it was not to such an extent as could have produced death.

No reference is made to the treatment of women and children for dysentery with ipecacuanha, as those belonging to the regiment have not yet arrived from England. In one respect only does it strike me that this remedy would be inapplicable to women. If dysentery attacked pregnant women, the sickness and vomiting so frequently induced by large doses of ipecacuanha might be attended with serious consequences.

Ipecacuanha, as a cure for acute dysentery, deserves a passing recognition in some other relations. It is quick in its action, saving the constitution from the injury of a tardy convalescence. By its adoption, the old plan of exhibiting mercury, often pushing it to ptyalism, will, I believe, be rarely requisite. General bleeding, or even leeching, will be much less frequent. It has never occurred to me, since I have adopted this remedy, to be obliged to draw blood, either generally or locally.

I am informed that some surgeons in this country are in the habit of meeting severe local pain and other symptoms by the application of leeches, in addition to the exhibition of the ipecacuanha, and speak favourably of such treatment; but I have no practical knowledge as to the advantage of this plan. How far dysentery, prevailing with any dyscrasic state of the constitution, as was so commonly the case at one time in the Crimea during the Russian War, would be under the influence of this mode of treatment, I can offer no remarks from experience. At that period a scorbutic taint so imbued the constitution, in many cases, that the complication of two diseases in point of fact was present, each tending to aggravate the other. But, setting aside such questions until experience shall have solved them, what a benefit to Europeans in tropical climates, what a saving of soldiers to the State, if ipecacuanha, on still further trial in India, shall be found to possess, even in a less degree than appears to me to belong to it, a curative power over a disease hitherto so unmanageable and dreaded amongst Europeans. It may be that the type of disease in India may differ in other years, and, as the recent mutinies have caused an influx of fresh regiments to the country, that the constitution may alter from longer residence in a relaxing climate. I trust, however, that the success of this remedy will not diminish; but rather, that further experience in its administration will obtain still greater certainty of its power. A hopeful argument is the general subscription to its merits by nearly every medical officer with whom I have conversed on the subject.

V.

FISSURE OF THE CÆCUM AND EXTRAVASATION OF FŒCES: PERI-CÆCAL ABSCESS, AND DISCHARGE THROUGH THE BOWEL.

BY WM. SLY, ESQ., *Assistant-Surgeon, 2nd Battalion, 16th Regiment.*

CORPORAL J. A., 2nd Battalion, 16th Regiment, an Englishman, aged 30, 1½ years' service, tolerably stout, but of strumous diathesis, and delicate aspect; admitted into Hare Park Hospital with circumscribed peritonitis, on the 1st July, 1859.

Since enlistment, has led a sedentary life, having been employed as orderly-room clerk; has long been troubled with a slight cough, and has been twice under treatment for chronic catarrh. On the 29th June, after making a hearty meal, he walked quickly over the Curragh, and, on stooping low, in order to pass under a fence, he suddenly felt intense pain in the right iliac region. He was unable to sleep that night, and the next morning was detained in hospital. Turpentine stupes were applied, and calomel and opium administered; subsequently, a blister. In a few days, when he was able to bear manipulation, I discovered a tumour, as large as the closed fist, between the ileum and umbilicus, which I diagnosed as peri-cæcal abscess, but ordered him injections of warm water, to ascertain the presence of scybalæ in the large intestines. A few lumps of hardened fœces came away, but the greater part of the evacuations were natural.

On the 7th July, I opened an ischiatic abscess, which discharged freely up to the date of the man's death.

On the 14th July, as all peritonitic symptoms had disappeared, the case was re-admitted under the head of Tumor Abdominalis.

Towards the end of the month, colliquative diarrhœa supervened, for which disease he took sulphate of copper with opium, and acid mixtures. The respiration at the apices of the lungs, which had hitherto been harsh, now became moist in its character. From the first to the 15th of August, the tumour steadily decreased in size, until it could no longer be felt, and, simultaneously with this diminution, the stools contained a large quantity of pus.

He rapidly lost ground under this complication of disorders, and died, completely worn out, on the 23rd August, at 11·30 P.M.

Autopsy twenty-four hours after death.

Lungs.—Both apices closely studded with tubercle; one cavity; some difficulty in getting out the lungs, from old adhesions.

No fluid in the pericardium; heart flaccid and fatty; no valvular disease.

Abdomen.—Liver pale, of normal size; gall-bladder distended with bile.

Spleen large, firm, lardaceous.

Kidneys in the first stage of granular degeneration; two or three small cysts in the left one.

Omentum dotted with miliary tubercles.

A few scrofulous ulcers in the ileum.

Two ulcers in the cæcum, one of which communicated with a cavity formed by the adhesion of omentum to the parietes of the abdomen in front and behind. The pus, which had formerly filled this cavity, must have escaped into the bowel, through the enlarged ulcerated opening, for the abscess was nearly empty.

Observations.—From the history of the case, and result of the autopsy, there is little doubt but that the strain produced by the man's suddenly assuming the stooping posture caused extravasation of a small quantity of fœces, through a minute opening in the ulcerated and attenuated wall of the intestine; that this escaped matter had been circumscribed by adhesive inflammation; and that, subsequently, the contents of the abscess thus formed had been discharged into the intestine through the same opening, further enlarged by the process of ulceration.

VI.

Case of Pleurisy, terminating in Empyema, Purulent Deposit in the Brain, and Paralysis.

By FREDERICK ROBINSON, M.D., M.R.C.P., *Battalion Surgeon, Scots Fusilier Guards.*

A young soldier of the 2nd Battalion, aged 22, and of a somewhat delicate constitution, who had very recently been discharged from hospital after treatment for syphilis, was readmitted on the evening of December 22nd, complaining of pain in the left hypochondriac region, accompanied by no pyrexial symptom except a slightly furred tongue. There was no tenderness on pressure over the abdomen, and he appeared to be suffering from an ailment rather frequent among soldiers—indigestion. He was ordered a dose of calomel and Dover's powder, followed by castor oil.

On the following morning he had derived no relief from the free action of the bowels, and he referred the pain to the region of the left false ribs. On examination, marked dulness and absence of respiration in the lower half of left lung existed in front and behind; there was no evidence of disease on the right side. He was cupped to a small extent, the pulse not warranting greater depletion, and calomel with opium in medium doses exhibited every second hour. The disease was then diagnosed as "sub-acute pleurisy with effusion."

On the 29th, the effusion had increased, and, except in a small portion of the apex of the lung, the respiration was quite inaudible; and the dulness general. The intercostal muscles scarcely acted at all, and the heart was evidently displaced to the right side. The gums were slightly affected by the mercury; tongue moist, skin cool; not much dyspnœa present; sputa scanty. The pain was relieved by the cupping. Complained of sleeplessness.

After this date he continued to improve under a treatment comprising a combination of mercury in alterative doses with Dover's powder, large blisters, and subsequently—the urine being turbid and loaded with lithates—alkaline diuretics with squill and digitalis. His strength was supported by beef tea and arrowroot.

On the 10th of January, the report described him as being much improved, and he was allowed to get up in the ward for a couple of hours daily. The respiration had gradually become audible, but still considerable dulness existed at the base of the lung. Although the dyspnœa had never been distressing, at times the breathing became more laboured for short intervals, independently of any exertion.

On the 14th, he was not so well; his appetite, previously good, became impaired, and his strength diminished. He was ordered to remain in bed again. The stethoscopic signs, however, continued so far satisfactory, that the respiration remained more distinct, and dulness less extended. The urine, notwithstanding diuretics in various forms, was scanty and turbid. He was ordered decoction of bark with iodide of potassium and bicarbonate of potass, the blisters being at the same time kept open, and his strength supported by nutritious diet, porter, &c. For some days previously he had been taking tolerably full doses of morphia, with but partial effect in causing sleep. The wakefulness was not attributed to any uneasiness in the chest or distressing symptom of any kind. He remained without any material change in his state until the morning of the 23rd, when the orderly found him lying insensible at half-past 7 o'clock. He appeared to have rallied soon afterwards and taken food, but at the time I was called to see him, an hour subsequently, I found the left arm and leg quite paralyzed, and left side of face, especially the angle of the mouth, much contorted. The pupils were fixed, dilated, and nearly insensible to the action of light and touch. There was no stertor or even heaviness of breathing, and he answered questions readily and with intelligence, though the articulation was difficult. The seizure appeared to have been preceded by no premonitory symptom of any kind. The left lower extremity was rather less sensitive to touch than the other, and there was certainly a slight diminution in the force of the left pulse as contrasted with the right, and also of temperature in the affected arm, the sensibility in which, however, seemed to be unimpaired. The right pulse was rather quick and feeble. A purgative of calomel was given, a blister applied to the nape of the neck, and arrowroot with brandy exhibited at intervals; subsequently, when the bowels acted freely, decoction of senega with sesqui-carbonate of ammonia. He then regained power in the arm so far as to be able to raise his hand to the head, but he was restless and his strength appeared to be failing, although he took food well.

On the 25th, it was observed that the pupil of the left eye remained fixed and insensible to light, and the eye-ball, to the touch, whilst the right had resumed its normal condition. He had, since the apoplectic seizure, complained greatly of sleeplessness, and begged anxiously for a composing draught to quiet him; and now it was evident he had become rather weak in intellect. He was given a little camphor mixture at bed-time to quiet his mind.

On the 26th, I found he had slept so very little of late that I considered it advisable to give a full dose of morphia, which, however, afforded him but an hour or two's sleep. The chest disease seemed to have been in no degree influenced by the supervention of the apoplectic seizure.

On the 27th, his breathing was more laboured; he was also affected with diarrhœa, and lost for a short time the power of controlling the action of his bowels. This ailment was checked with some difficulty, and not until strong astringents with antacids had been freely administered. At this time the pupil of the left eye became sensible, in a partial degree, to the action of light, but the eye-ball remained unaffected by touch. There had been no change in the paralyzed limb, but there was much less distortion of the face and tongue. He was ordered a full allowance of wine when the diarrhœa set in.

On the 31st January, he had rallied very perceptibly in every respect, the appetite being good, bowels regular, and the respiration easy. He expectorated, tolerably freely, muco-purulent sputa, and there was no tendency to hectic. He became worse a day or two after, less intelligent, weaker, the cough more frequent, but expectoration copious and easily ejected. The respiratory function was carried on so easily (and with so little effort) that it could not have been surmised —judging from appearance only—that the function of one lung was suspended.

On the 9th February, he voided urine involuntarily for a few days, and from this date he gradually, almost imperceptibly, lost ground; his appetite failing, but no other change occurring in his symptoms further than a tendency to perspiration at night.

About the 8th of March, he became subject to paroxysms of dyspnœa, accompanied by fits of coughing, and succeeded by the usual tolerably tranquil respiration. On the evening of the 10th, he was seized with one of these attacks, so severe as to threaten asphyxia, and which passed off in a couple of hours, leaving the patient much exhausted. The question then to be determined was the propriety of attempting to relieve the patient by tapping the chest. (I should mention that the measurement of the left side exceeded that of the right by three-quarters of an inch.)

The intercostals acted, though very slightly. Although no doubt was entertained that the chest contained pus, the absence of all urgent symptoms, and the ease with which, up to this period, the right lung had performed the respiratory function, had rendered me indisposed to resort to an expedient of so grave a nature and doubtful efficacy as regards the ultimate probable results. I availed myself of the experience of my friend, Dr. Banks, and his opinion, together with that of my colleague, Mr. Turner, being in favour of an operation, this proceeding was determined on.

Whilst examining him more closely, with the view of deciding on the best situation for the introduction of a trocar, Dr. Banks noticed some prominence over the eighth and ninth ribs, in a line parallel with the posterior border of the axilla. On each inspiration, a slight but distinct impulse was evident to the touch, showing that the fluid was seeking exit by absorption of the tissues. The poor fellow's helpless state had rendered me indisposed to disturb him by too frequent examination, and his paralyzed arm covering exactly the position of the somewhat diffused swelling, had prevented me from becoming aware of its existence. This discovery, of course, determined both the site and expediency of the operation, and I passed a trochar obliquely upwards through the tumour. Six pints and fourteen ounces of thick healthy-looking pus, devoid of odour, were drawn off. More fluid evidently remained, but as air was beginning to pass through the orifice on each inspiration, I thought it advisable to place a sponge and bandage over the aperture. He felt faint, and a little brandy and water was administered. Some relief was afforded by the operation, he said; but there was no marked difference apparent in the respiratory function, which, as I have mentioned, in the absence of attacks of dyspnœa, had been performed with but little labour. I did not wish to distress him by a close examination with a stethoscope, but bronchial respiration, to a slight extent, was audible posteriorly near the spine. I may remark that this had existed, but more indistinctly, since his admission. The man remained tolerably comfortable during the day, and took food well. He passed a restless night, and the orifice in the side having closed up, I introduced a director to clear the passage, and between the hours of 10 o'clock A.M. and 10 o'clock P.M., five pints and eight ounces of pus of the same character, but of slightly offensive smell, were evacuated, with relief to the sufferer.

He was, with much difficulty, persuaded to take some wine and beef-tea, and, as he had rested badly the previous night, a quarter of a grain of morphia was given. He slept tolerably well, but took little nourishment, and early on the morning of the 14th his bowels and bladder acted involuntarily. His strength was evidently failing fast, but by means of nourishment and the mistura vini gallici, given frequently, he lingered, perfectly conscious, and apparently free from suffering, until the morning of the 16th, when he expired at half-past 9 o'clock A.M., four days subsequent to the operation. There was a slight oozing from the orifice from the time it was reopened until death took place.

Autopsy, twenty-four hours after death.—On opening the chest, the heart was found occupying a position exactly beneath the sternum, extending into the epigastrium. The liver, greatly enlarged, reached completely across into the left hypochondrium, and, together with the abnormal position of the heart, effected a displacement of the stomach. The latter was lying low down in the left hypochondrium, bordering on the lumbar region. The left cavity of the chest was converted into a vast sac by means of a thick firm layer of false membrane, reflected over the lungs, which, compressed to the size and thickness of a small hand, lay close to the spine. The surface of the false membrane was covered by a complete net-work of firm, strong, bands, in some parts so regular in distribution as to present the appearance exactly of a miniature rope-ladder. Forty ounces of puriform fluid occupied about one-third of the sac, from which a very offensive gaseous smell emanated. The orifice of the puncture was free, and the diaphragm, though pushed up by the diseased liver, was uninjured. The muscles over the rib were nearly absorbed, and the integument infiltrated with pus; the periosteum was also softened and partly detached there.

The right lung was perfectly healthy, and only slightly congested at the base. The liver, weighing five pounds six ounces, presented the characteristic appearance of cirrhosis; spleen small, but healthy. Both kidneys were in an advanced stage of disease, the structure pale and semi-disorganized, particularly at the lower extremity of the right, where the appearance of a morbid growth, not forming an integral part of the viscus, was presented. The urine had not been tested for albumen, no suspicion of renal disease having been entertained.

On removing the skull, and opening the dura mater, two ounces of straw-coloured fluid escaped. The vessels on the surface of the brain and the pia mater were congested, and considerable effusion of the same nature existed beneath the arachnoid throughout, The cerebrum was somewhat congested, but firm and healthy, except in the right ventricle, where softening and purulent deposit had disorganized the whole of the corpus striatum.

Remarks.—I apprehend that the disease of the liver and kidneys had existed for a good while, independent of the chest disease, as the patient had been invalided from the Crimea for fever four years ago. He had since led a rather intemperate life. Probably the mercury he necessarily took, although administered cautiously and gently by inunction (his sore being of the Hunterian form), enhanced a somewhat cachectic condition of the body, and, together with the man's own neglect or imprudence, as well as exposure on duty, induced the chest disease. I should remark, however, that he was kept off duty until he declared himself perfectly fit for it and his strength had been tolerably re-established. The disease in the brain was probably a result of blood-poisoning at the time the fluid in the chest became changed to pus. The form of disease was, from the first, of an asthenic type. The tendency of the matter to evacuate itself spontaneously, determined at once the necessity of operating, but the failure of strength was so considerable afterwards that I question whether the man's life was prolonged by the step. The expediency of an operation in such cases is one of grave importance. It may be that, at an earlier stage, it would have been both beneficial and warrantable, although I confess that the absence of distress in the patient's breathing, and of other urgent symptoms, together with the amendment at one time taking place, made me consider the operation inexpedient until nature pointed out the necessity of the step. The complication with disease of the brain I believe to be a rare one, and Dr. Stokes informs me that he has never met with a similar case. It affords me satisfaction to mention the concurrence of this eminent physician in the treatment adopted. He tells me that he has several patients who visit him at long intervals, and who enjoy tolerable health and follow their avocations, although one side of the chest is filled with serum, resulting from chronic pleurisy. In cases where the change from serum to pus is clearly evidenced by hectic and other symptoms, the course to be adopted would be more apparent, but in the present one the indications of such transition were obscure and not reliable.

VII.

CASE OF GUNSHOT WOUND OF THE FACE (ATTEMPTED SUICIDE) WITH RECOVERY.

By J. SAVAGE, M.D., *Surgeon-Major, Royal Horse Artillery.*

ABOUT 7 o'clock P.M., on the 12th January, 1850, in the tower at Vido, an island opposite Corfu, although two other men were in the room at the time, Gunner J. M Royal Artillery, made an attempt to destroy himself by attaching a string to the trigger of his carbine, and pulling it with his foot. The ball entered behind the chin, and made its exit at the right ala nasi, causing a ghastly and bloody laceration of all the parts between. The anterior third of the lower maxilla was blown away, with the exception of a couple of teeth and a small piece of thin alveolar process, which remained attached to the everted lower lip: the anterior portion also of the right and part of the left superior maxillary bones, were carried away (the ball having gone through just behind the upper incisor teeth), a small portion, with two incisor teeth, continuing attached to the left half of the upper lip, which remained uninjured. The tongue had escaped, for the ball passed anterior to it, through the sublingual gland. The mouth was blown open, and all the soft parts constituting it, as far upwards as the right ala nasi, were thrown into one bloody, torn, jagged, and everted flap. He was seen immediately, on the island, by Staff Assistant Surgeon Dr. Bone, and Staff Surgeon Humphry. There was a considerable effusion of blood at the time, increased by vomiting which came on; but this, I am told, was gradually restrained by cold water. He was a prisoner, sentenced to extra drill, on account of drunkenness, at the time of the occurrence (his fourth offence since arrival at Corfu); but it was thought, also, that the recent deaths of his mother and sister in Ireland, from the cholera, which was then raging there, and his inability, by reason of intemperate habits of late, to send them the pecuniary assistance which he had been accustomed to do, had been preying greatly on his mind.

In the above state he was brought over to the Artillery Hospital at Corfu, at midnight, and seen by me at once, when there was still some oozing of blood. Owing to the hæmorrhage, and partly also from the cold of the voyage over to Corfu in an open boat, there was no pulse, but as he became warmer it returned. He was unable to speak, but some drink was given him by the stomach-pump. Cold water was directed to be applied to the wound and face by an orderly constantly through the night.

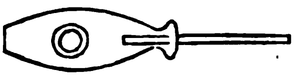
9 A.M.—No sleep; Pulse, 98; face swelling.

Tea with one-third of milk, given now by stomach-pump, and again repeated during the day.

8 P.M.—Is fortunately able to swallow liquids poured over the tongue by means of a sponge; pulse has risen to 120; some headache and pain about throat; stomach-pump therefore omitted.

9 P.M.—Injiciatur enema catharticum.

January 13.—No sleep; cannot speak; some headache and pain about throat; skin cool; pulse, 84; saliva drivels away a great deal. Liquids are given by a child's glass feeding-bottle, thus, which answers well.



Continue cold-water dressings.

Wound gently approximated a little by a bandage over the head.

8. P.M.—Sumat acetat. morphiæ, gr. ½.

Injiciatur enema cathart.

Affric. linimentum ammoniæ.

Fever diet: 1 pint milk, mutton soup.

January 14.—Slept nearly three hours, and writes on a slate that "he thinks he is much better;" no headache; pulse, 84. Is a good deal inconvenienced by saliva and liquids drivelling and passing out through the bullet hole under the chin. A few small sloughs dislodged from the side of the tongue.

January 15.—Slept three hours; writes that "his breath stinks;" pulse, 74; throat better.

Parts of the wound washed with a weak solution of liq. sodæ chlorinat. et tinct. myrrhæ.

Enema cathartic. h. s.

Fever diet: 1lb beef for soup; milk, 1½ pint; 1 gill port wine.

January 16.—Four and a-half hours' sleep; one sufficient stool from enema; small portion of bone (inferior maxillary) containing two teeth, which was adhering to lower lip by a piece of gum, taken away to-day: and some trifling hæmorrhage from the small nick of gum that was divided.

January 18.—Horribly fœtid odour from sloughs; he writes that "he has more pain;" pulse, 82; four hours' sleep.

January 25.—Had a rigor the evening before last. A small spiculum of bone extracted from lower lip (inside). The wound looking more healthy, and throwing out florid granulations. Takes some thin oatmeal gruel.

Warm resinous dressing to the lower orifice (that of entrance).

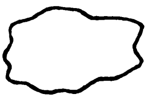
The wound of upper lip gently closed with adhesive plaister.

Enema cathart.

Contin. lotio liq. sodæ chlorinat. et tinct. myrrhæ.

February 2.—Bowels not opened without enema since the accident. The orifice under the chin now healed, and no fluids pass through it. Great loss of saliva all along. A small piece of bone loose, and extracted to-day from the inferior part of the wound. Feels very weak.

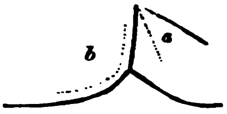
All the wounds of upper and lower lip brought together as well as possible. (To have English porter also.)

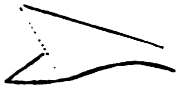


March 31.—Shortly after the last report, the natural action of the bowels returned, and they have since been opened without enema or medicine. Several small spicula of bone have also come away at various times, and nature is now rapidly completing the healing, and the parts are accommodating themselves as well as the severe injuries which they have received admit of. In furthering this end, the two remaining portions of the lower maxillary bone are approximating in front, and are now within an inch of each other; and the intervening soft parts will, I imagine, get matted and consolidated, so as finally to admit of some useful power of the lower jaw. At present, he is not able to use anything more solid than sopped bread or rice pudding, and although I can understand pretty well what he says, still articulation is very imperfect, by reason of the deficiencies in the lower jaw, teeth, and lips. There is also still much drivelling of saliva from the mouth.

July 4.—No bone has come away since April 4. The jaw is firmly consolidated by callus anteriorly, and there is still a good deal of drivelling of saliva through the deformed fissure in the lower lip; the upper lip also is a good deal disfigured by a hare-lip, which has existed since the part was healed.

For these reasons, therefore, on the 29th June, assisted by Assistant Surgeon Smith of the 36th Regiment, I detached the lower lip from its almost cartilaginous adhesion to the gum, and having done so, I treated it as a hare-lip and brought the edges into as neat contact as the parts admitted, by means of needles and ligatures. The upper lip was then operated on after the more recent improved method. The bistoury was passed through the lip, but not entirely, according to the dotted line in the margin (marked *a*) so that when the little piece of lip was turned down it presented this appearance:—





This latter receives the bit of the other side, which is pared as in the place marked *b*, and the consequence is that the lip is less disfigured than by the old operation. A small piece of lint was inserted between the lower lip and gum to endeavour to prevent too extensive adhesion between them.

The lips were soon healed, and this poor fellow was sent invalided to England, most grateful for all that had been done for him, and thankful that he had been mercifully saved from the destruction he had so wickedly tried to effect.

VIII.

ABSTRACT OF ANNUAL REPORT ON THE WOUNDED OF THE 78TH HIGHLANDERS AT LUCKNOW IN 1857.

By J. JEE, Esq., C.B. V.C, *Surgeon, 78th Highlanders.*

Vulnus Sclopitorum.—268 men have been wounded during the year, of whom 213 recovered, and were discharged to duty, 35 died, 17 were invalided, and 3 remain. Amongst so many wounded, numerous severe and interesting cases presented themselves, but I must limit myself in this place to an abstract of a few cases only.

Hospital gangrene made its appearance amongst the wounded in the besieged garrison of Lucknow; and I have been informed that it was of frequent occurrence amongst the wounded located in the large and airy field hospital, "the Dilkoosha," after the capture of Lucknow, notwithstanding the additional comforts with which they were surrounded. The treatment pursued in simple gun-shot wounds, after arresting hæmorrhage, and after removal of all foreign bodies, consisted in sponging the wound clean, and applying a compress wetted with cold water, retained in *situ* by one or two turns of a bandage, and constantly kept moist. The wounds were dressed twice daily; tremor and mental disturbance were allayed by the administration of a small quantity of spirits, or spirits and water, and if severe by an opiate. At first the patient was put on farinaceous diet, and, if symptoms of inflammation appeared, antiphlogistic treatment was had recourse to.

In the treatment of hospital gangrene, our chief reliance was on quinine, ammonia, camphor, opium, and spirits (as neither wine nor beer were procurable), and on the best diet that the besieged garrison afforded. There was no possibility of moving the patients away from the sphere of contamination. Opium or morphia, either alone or in combination with bark, are, I consider, our sheet-anchor in this disease. Nitric acid was also applied, and on the sores assuming a healthy appearance the nitric acid and opiate lotions, and basilicon ointment with turpentine, were found beneficial.

Private Michael O'Donnell was wounded during the action of Cawnpore by a musket-ball which entered at the upper part of the left side of the thorax, a little above the nipple, and made its exit close to the left side of the spine, and near the fourth dorsal vertebra, the spinous process of which was laid bare. There was considerable nervous shock, followed by a tendency to syncope, and subsequently dyspnœa and hæmoptysis, with dulness on percussion over the left side of the chest; he was treated with nauseants, counter-irritants, and purgatives, under which he progressed favourably, and was enabled to accompany the sick and wounded who proceeded to Allahabad for change of air on the 27th August.

Private John Kennedy was wounded as the force entered Lucknow on the 25th September, 1857, by a musket-ball, which entered the chest about two inches below the middle of the right clavicle, passing out nearly in a similar situation on the opposite side. There was considerable hæmorrhage and pain on the receipt of the wound, but little or no nervous shock. No fracture of the ribs could be discovered, although the ball had entered the cavity of the chest. The patient was treated with opiates and antimonials; cold water dressings were applied to the wounds, and the chest supported by a broad bandage. On the 26th he was seized with a severe cough, with bloody sputa, but the wounds presented a healthy appearance until the 29th, when they became infested with maggots, which were removed by the employment of turpentine dressings; the wounds then improved, and the cough and sputa abated, but the patient became weak and emaciated. On the 14th of October, hæmorrhage suddenly took place from the wounds, which, notwithstanding every mode of treatment adopted, recurred at intervals, and he expired on the 19th of the same month.

Private Owen Carroll was wounded during the entrance into Lucknow, on the 25th September, by a slug, which entered about a quarter of an inch above the sternum and a little to the right side. There was scarcely any hæmorrhage or constitutional disturbance on the receipt of the wound, which was so small that it would not admit the little finger; a probe, however, could be passed readily into the cavity of the chest. Cold water dressings were applied to the wound, and a bandage round the chest, but subsequently symptoms of inflammation within the cavity supervened, which were combated by means of calomel and opium, with purgatives and a farinaceous diet; but hæmoptysis and purulent expectoration occurred, and on the 7th of October he complained of pain at the upper and inner part of the right scapula, where a fluctuating swelling soon afterwards appeared, in which an opening was made on the 25th, and about half-a-pint of dirty-looking highly-fœtid pus evacuated. The wound in the throat nearly healed, but matter continued to form in the neighbourhood of the opening in the back, requiring several fresh incisions; and the patient becoming rapidly exhausted, died on the 25th of November at the Alumbagh. There was no opportunity for a post-mortem examination.

Private John Brock was wounded during the entry into Lucknow by a musket-ball, which entered about four inches on the left side of the ninth dorsal vertebra, and made its exit, in a straight line, near the spine on the same side. There was also another wound from a musket-ball, which entered on the right side of the vertical column, nearly on a line with the place of entrance of the former, and had the appearance of having passed through the body, as the wound caused by its exit was in the centre of the right side, between the seventh and eighth ribs, but, on examination, the finger could not be passed into the cavity of the chest, neither could any fracture of the ribs be discovered. There was hardly any nervous shock on receipt of the wounds, and little or no hæmorrhage. Cold water dressings were applied, also a bandage round the chest, while salines and a spare diet were administered. With the exception of slight sloughing of the wound in the side, the patient recovered without a bad symptom, and was discharged to duty on the 26th of December, 1857.*

Drummer James Murray was wounded at Lucknow on the 20th October, by a musket-ball, while engaged in digging earth to fill sand-bags for a barricade, being at the time in a stooping posture. The ball entered the neck, behind the right ear, making its exit about an inch and a-half lower down, and being very superficial in its course; it again entered behind the middle of the right clavicle, which it fractured, and, traversing the thorax, passed out between the eleventh and twelfth ribs. There was considerable nervous shock on receipt of the wound, and some hæmorrhage, but there were neither cough, dyspnœa, nor hæmoptysis; there was some emphysema round the margin of the wound, behind the clavicle, and a few bubbles of air escaped with the blood. A little rum and water was administered to rally the patient; cold water dressings were applied to the wounds, a wedgeshaped pad was placed in the right axilla, and the shoulders braced back by a figure of 8-bandage. A bandage was likewise applied round the chest, and an opiate administered, followed by the solution of tartarized antimony, the state of his pulse not admitting of depletion. On the 21st he had experienced a very restless night, his pulse being quick and small, and the skin hot and dry. He had a great desire to cough, but could not do so on account of the pain it produced; he also expectorated a small quantity of blood. He was bled to the extent of 20oz., and calomel and opium administered along with the tartrate of antimony. On the 22nd he expresed himself as feeling greatly relieved; there was scarcely any pyrexia, but the pulse was quick, and the hæmoptysis had increased. The wounds looked healthy, and discharged a serous fluid, tinged with blood. The antimony and calomel were continued, and small portions of bone were removed from the wound behind the clavicle. The patient appeared to progress favourably until the 26th, when considerable hæmorrhage occurred from the wound in the shoulder, the other wounds assuming an unhealthy appearance; the hæmoptysis also increased, and he suffered much from a painful cough.

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* Mr. Jee states, in his Annual Report for the following year:—"This patient, while stationed at Bareilly in the following summer, was attacked with acute hepatitis, which terminated fatally in abscess of the liver on the 2nd July; the abscess was found to correspond with the cicatrix of the wound received at Lucknow the previous year."—H. M.

The external hæmorrhage having been arrested by a graduated compress and bandage, he improved somewhat until the 4th of November, when the hæmorrhage from the wound behind the clavicle returned, followed next day by fever and distressing cough. The administration of antimony was resumed. Next day, the 6th, the cough had become worse, and he expectorated a quantity of grumous-looking matter; pulse, 115, small; skin hot and dry, and he could only lie on his back supported by pillows; to have calomel and opium, and a full opiate at bed-time. On the 7th all the symptoms above enumerated continued unabated, and hæmorrhage took place from the wound in the side. The patient died on the 8th November. On examination, after death, the right lung was found to be completely disorganized, the pleura costalis thickened; the second, third, and eleventh ribs were found fractured.

Private Robert Goodwin was wounded during the siege of Lucknow, on the 8th of November, while he was on sentry at a loop-hole, by a musket ball, which entered about an inch posterior to the frontal and a quarter of an inch on the left side of the sagittal suture, running along the parietal bone of the same side for about an inch and a-half, directly parallel with the sagittal suture, causing a wound of the scalp of the same length and a quarter of an inch broad, which exposed the bone, and likewise caused an irregular depression of the cranium about an inch long and a quarter of an inch broad. On receipt of the injury the patient became immediately insensible; pulse 56, slow and regular; breathing stertorous and laborious; pupils slightly dilated and insensible to the stimulus of light; the skin was cool, and there were some spasms of the arms. After consulting with several medical officers who where present, I proceeded, being aided by Assistant-Surgeon Clarke, of the Company's Service, to remove, with the trephine, a portion of bone near the depressed surface, on removal of which the internal table was found much splintered, but the dura mater uninjured and of a healthy appearance. There was a considerable amount of venous hæmorrhage The fragments being removed and the edges of the divided scalp having been brought into apposition by a few points of suture, cold-water dressing was applied. The pulse rose to 78 immediately after the operation, and the respiration became quiet and regular. Ten grains of calomel were then administered, and were followed by a purgative enema; and about an hour and a-half subsequently the pulse rose to 100, the skin became hot and dry, and the patient opening his eyes looked about him, and made an attempt to rise in his bed, his arms being slightly convulsed. He was immediately bled to the extent of about 20 ounces, and orderlies were placed beside him to prevent him from leaving bed. The blood presented a cupped appearance. Four hours afterwards the pulse had fallen to 84, weak; skin warm and moist; pupils less dilated, and not so sluggish.

At my next visit, about five hours afterwards, he was in much the same state, and lay on his back, with his eyes open, looking round him like a person waking from sleep. Ten more grains of calomel were administered; bowels freely moved by the enema. On the 9th he was quite sensible, and had dozed during the night; said that he felt cold, and that his head was heavy, also that he did not know how and where he was wounded, or how he came to be in hospital. Pulse 100, labouring; skin cool and perspiring; tongue furred, yellow, and moist. He had spat out the calomel given him on the previous evening. The wound appeared quite healthy. I now ordered 3 grains of calomel to be given him every two hours, and another purgative enema immediately. On the 13th he complained of his mouth being sore, there was slight mercurial fœtor, and the calomel was therefore discontinued. The pulse was 80, soft and regular; his bowels acted well, and he took his diet, consisting of arrowroot and broth, with apparent relish. He continued to progress favourably, until the evening of the 18th instant, when having been exposed to fatigue during the journey to the Dilkoosha, he complained of severe cold, and shortly afterwards expired, probably from exhaustion.*

"Private Joseph Hendry, 78th Highlanders, was wounded on the 14th October, 1857, during the siege of Lucknow, by a round shot, that shattered his left leg above the ankle. There was considerable pain, and some amount of constitutional disturbance; I, however, after administering a little rum (which was the only stimulant we could obtain during the siege, and of that the smallest possible supply, although it was reserved for the sick and wounded), proceeded at once to remove the limb below the tuberosity of the tibia by the flap operation, the patient having been placed under the influence of chloroform. The anterior tibial and peroneal arteries required ligatures, and five sutures were inserted, very little blood having been lost during the operation. He did well, notwithstanding the tuberosity of the tibia exfoliated to some extent. The stump and ulcer over the tibia had nearly healed when he left Alum Bagh, on the 27th November, with the sick and wounded, for Cawnpore; and he was subsequently invalided to England, with an exceedingly good stump, and being able to walk any distance.

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* Mr. Jee writes: "On the 18th November, a large number of doolies having been sent into the garrison from the camp of the Commander-in-chief, who had succeeded in effecting a communication with us; the sick and wounded (those of the 78th Highlanders, amounting to 5 Officers and 58 men), some in doolies and others on stretchers, were conveyed at 11½ o'clock P.M., under a strong escort, to the 'Dilkoosha,' where the Commander-in-chief was encamped. The night was very cold; and, in consequence of its being dark, some difficulty was experienced in finding the road, so that the Dilkoosha was not reached until about 3 o'clock A.M., on the 19th, when I found that the building was crowded with sick and wounded, and that no provision had been made for the accommodation of these from Lucknow; they did not, therefore, get under cover till nearly 3 o'clock, P.M., as elephants had to be dispatched to Alum Bagh, a distance of about three miles, to fetch tents; but I succeeded in getting some of my worst cases under cover in the out-building of the Palace, and the 9th Lancers kindly gave up their mess-tent for the use of the wounded Officers."—H. M.

IX.

EXTRACTS FROM THE MONTHLY REPORTS FROM CHATHAM DURING THE YEAR 1859, FURNISHED BY J. R. TAYLOR, ESQ., C.B., F.R.C.S., INSPECTOR-GENERAL OF HOSPITALS, HONORARY SURGEON TO HER MAJESTY.

TEN cases of wounded arrived from India during the month. January 18 In one of them, where the middle finger had been amputated after gunshot wound, Surgeon-Major Matthew removed the ring-finger on the 16th, in consequence of its contracted and diseased state. The wound is now all but healed, and the remaining part of the hand will be serviceable.

Amongst the re-admissions of wounded from India, is a case of abnormal anus, the result of gunshot wound perforating the left ilium, and wounding, probably, the descending colon. The subject of this injury, Private Cornelius Hogan, 32nd Regiment, landed from India in June last, and an account of his case is given in the report of the wounded arrived here during that month. He was transferred from Fort Pitt to Yarmouth Hospital, on the 4th July last, and thence sent to the depôt of his regiment, which he joined on the 28th October. He was tried on the 9th of December, and sentenced to "forty-two days' imprisonment at Fort Clarence, with such labour as the surgeon in charge might consider him capable of performing without risk." It seems, however, that previously to appearing before the medical officer he had to undergo more than an hour's shot-drill, by which the wound was re-opened. He was consequently sent to the Garrison Hospital on the 18th of last month, and transferred to Fort Pitt on the 29th. This is the only case of the kind, of distinct gunshot perforation of the contents of the abdomen amongst the wounded, during the late mutiny in India, that have arrived up to the present date.*

* A somewhat similar case remains under treatment in Guy's Hospital from amongst the invalided (wounded) from the Crimea. The case is that of Private James Beehan, of the 19th Regiment. In a note dated 21st of January this year, Mr. Birkett says, in reply to an inquiry as to the progress of this case:—" James Beehan, the discharged soldier, with artificial anus in the left loin, the result of a bullet wound, is now in Guy's. He has since my last report suffered with severe attacks of albuminuria, and is anasarcous." Particulars of this case are to be found in the *Lancet*, vols. i. and ii. for 1855, and in various medical reports from this station from 1855 to 1857.

Private Cornelius Hogan enjoys at present very good health, but being now obviously unfitted for the service by result of his wound, will be transferred to the Invalid Depôt.

b. 1859. During the month, thirty-nine wounded have arrived from India, including the following cases of amputation after gunshot wound:—

1 of Thigh (middle third).
1 „ Leg (5 inches below knee).
1 „ Arm.
1 „ Forearm.

The two following cases are of special interest:—

"Private Peter Jack, 79th Regiment, was wounded on the 19th March, 1858, near Lucknow. The bullet entered the back, 3 inches to the right side of the spinous processes of the vertebræ; and about 2 inches below the level of the angle of the scapula, and made its exit 4½ inches to the right of the middle line, and 4 inches above the mammilla in front of the chest on the same side. The wound is stated to have been followed by severe pleuro-pneumonia and much dyspnœa, with hæmoptysis, for which he was repeatedly bled. The surgeon seems to have thought that the lung was wounded (and doubtless a direct line from entrance to exit would pass somewhat deeply through the lung), but this appears to be doubtful, as both the openings healed about two months after the infliction of the wound. The skin in neither situation is depressed or adherent, and the lung now works quite normally, while the man's general health is excellent."

"Private Michael Cassidy, 1st Battalion 10th Regiment, was wounded on 11th May, 1858, by a musket ball, which passed through the left upper arm, about 3 inches above the elbow joint, over the biceps muscle. This seems to have been a flesh wound, which is now soundly healed, but some loss of power of the hand remains. The ball then entered the left side of the belly, about 3 inches above the crest of the ilium, and made its exit in the left loin about 2½ inches to the left of the spinal column, on about the same level, wounding the colon in its passage. The wound of entrance is soundly healed, but that in the loin remains open, and fæces and flatus still pass through it, and have continued to do so since the receipt of the wound. His gums at present bleed easily, and are dark coloured. He also complains of diarrhœa and passage of blood with prolapsus ani. Has a pile just within verge of anus. Aspect, that of bad health."

The preceding is the second case of abnormal anus by gunshot perforation of the intestine arrived amongst the invalided wounded from India. Both cases are now in Fort Pitt. The first case, that of Private Hogan, of the 32nd Regiment, was noticed in last month's report. In Mr. Matthew's report, he observes, in Hogan's case, that the fistulous opening has again closed. The 2,296 cases of wounded received at Chatham from the Crimea furnished only one such instance, viz., Private James Beehan, 19th Regiment.

It is worthy of note, that in all these cases the abnormal anus is on the left side. In Cassidy's case, however, the wound is not complicated, as in Beehan's, with injury to the vertebra, and probably also to the kidney, nor with perforation of the ala of the ilium, as in Hogan's case.

Operation fo the radical cure of Herni

Two of these cases were noted last month; the results, it is to be feared, will disappoint expectation. There can be no doubt that in three of the cases the digital fold of scrotum, which was carried up through the external ring, has by degrees wholly unfolded itself, notwithstanding due care and sufficient retention of the needle and of the plug, and the lubrication of the latter with blistering ointment before introduction. Mr. Matthew, who was the operator in these cases, reports of them as follows:—

> "Hernia inguinalis.—Two remained from last month, on which the operation known as 'Wützer's' for the radical cure of the complaint was performed. In both these some protrusion of the gut into the canal, but not through the external ring, occurred on the thirty-eighth and twenty-fourth days after the respective operations; in each case a truss has been applied, and no return of the protrusion has since shown itself in either, but the full success of both, as fitting the patients for the active duties of a soldier, must so far be considered very doubtful. Six more cases of inguinal hernia have been admitted, two of which have likewise been submitted to the operation, with better prospects of complete success. A third was complicated with hydrocele, which has been tapped, and injected with iodine before adopting any further proceeding. A fourth is complicated with broken health, the result of Mediterranean fever. The subject of the fifth, is fearful of submitting to any operation, and the sixth has been invalided, being affected with incomplete rupture of both sides, with general laxity of the wall of the lower and lateral parts of the abdomen."

March 1859

The thirty-nine wounded arrived during this month furnished only one case of much interest. The patient, Private John Fraser, 93rd Regiment, had been shot through the shoulder joint. The wound was open, and from the state of parts, Mr. Matthew found it necessary to perform the operation of excision of the head, together with 2½ inches of the shaft, of the humerus. The operation was performed on the 17th March, and the patient is doing well.

Staff-Surgeon Dr. Williamson, lately in charge of the surgical division, noticed in his reports the number of apparently preventable cases of contraction from various stations, but particularly from on board ship, and amongst the wounded from India. By forcible extension of the limb, with or without the use of chloroform, he found a large proportion of these cases readily curable, and that in the remainder some improvement could generally be effected by the same means.

In the following remarks on the same subject, by Surgeon-Major Matthew, in his surgical division report for this month, I quite concur:—

> "*Contractura.*—Three remained—three admitted. None of the cases

thus returned are the result of wounds; but I cannot here forbear to notice the frequent frightful deformity presented on arrival at this hospital, more especially in men from India after gunshot wounds, and other wounds and injuries, which, it appears to me, a very small amount of attention on board ship during the voyage, might have altogether prevented. This condition has frequently necessitated the division of the tendons by sub-cutaneous section, and more frequently still has required much patience on the part of the surgeon here, or the exhibition of chloroform, and some frequent suffering on the part of the invalid, in order to partially remedy what should have never been allowed to occur. It is probably true that the injuries in question were all healed before the men were put on board ship, and thus it has, no doubt, been considered that these invalids required no surgical care."

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In only one of the four cases of rupture, in which Wützer's operation was performed, has the result been successful. The case is that of Private William Coombs, 2nd Battalion Military Train. "No return of the hernial protrusion occurred, and this soldier was sent to his duty forty-two days after the operation. But here, as in the other three cases operated upon, the invaginated portion of skin has unfolded completely." In another of these cases the soldier has been returned to his duty, but wearing a truss, the gut having protruded again on the 16th day after the operation.

To the notice here given of these cases, Mr. Matthew adds, "It will probably be worth while to try what can be effected by Wood's operation, which consists in drawing together the two pillars of the canal after a sub-cutaneous incision."

1859.

Seventy-one wounded have arrived from India since last report, making the total wounded by the mutiny hitherto arrived at Chatham, 674. Of this number, 166 are cases of amputation; and six of these, as follows, are included amongst the seventy-one wounded received during the month:—

Arm	1	
Fingers	1	
Thumb	1	
Thigh	1	at junction of middle and upper third.
Leg	1	
Toe	1	
Total ..	6	

Surgeon-Major Matthew, in his monthly report, notices the following interesting cases amongst the seventy-one recent arrivals:—

"Private Joseph Mumford, 42nd Regiment, was wounded at Lucknow, in March 1858. A bullet entered the right side of his neck, about 1¼ inches above the sternal articulation of the clavicle, and was extracted from the opposite side of the neck, behind the centre of left clavicle. The trachea was injured, and the patient spat blood for seven or eight days, and air made its escape through the opening of entrance. The right brachial plexus was also injured, and, although the wounds are long since healed, all the fingers of the right hand, on admission, were quite useless. They were firmly fixed in the straight position, and any attempt at bending them gave intense pain in the course of the median nerve. The hand was cold, affected with nervous tremors, and all the fingers more or less numb, although both the sensation and motion of the thumb remained. Passive motion and careful bandaging promise to restore a considerable use to the hand."

"Private William Anderson, 61st Regiment. This is a distressing instance of complete loss of both testicles following shell laceration of the scrotum. The posterior part of the scrotum was torn away, and the testicles, which were, at the same time, severely bruised, laid bare. They subsequently sloughed, and separated."

"Private C. Leigh, 75th Regiment, has a most useful arm, although, as a consequence of a gunshot compound comminuted fracture of the ulna, there remains an interval of an inch between the fractured ends of the shaft of that bone."

"Private William Cunningham, 1st Battalion 8th Foot. An instance of compound comminuted gunshot fracture of the femur. This is a very unfavourable example of the results of treatment of this description of injury without amputation. The limb is only an incumbrance. The shortening is from 4½ to 5 inches, and there is great deformity from the union of the fractured ends, which are in the middle third, being exceedingly irregular, with the upper end nearly projecting through the integuments. The knee and ankle joints are almost immoveable."

"Private James Moore, 1st Battalion 24th Regiment, wounded at Jhelum, 7th July, 1857. A ball entered the left groin, and made its exit at the buttock, injuring the great trochanter. It is doubtful, at present, if the whole of the head and neck of the femur are not necrosed. If so, resection will afford the man the only chance of recovery."

"Private George Steptoe, 75th Regiment. This case may be noticed from the peculiarity of a circular healed cavity, at the upper end of the tibia, remaining after gunshot perforation of the cancellous head of that bone. This cavity is 1¼ inch deep, lined with quasi cuticle, and broad enough to admit a large-sized goose-quill."

"The case of Private Frederick Drake, 1st Battalion 60th, is noteworthy, from the fact that, although close anchylosis of the femur and tibia have followed a gunshot wound of front of right thigh, subsequently to which abscesses and sloughing took place, yet the patella still remains freely moveable."

Besides the seventy-one wounded from India above noticed, there have also arrived three cases of gunshot wounds from China, and an invalid by gunshot wound received at the battle of Maharajpore in 1843. In the last case a canister shot had been lodged ever since in the superspinous process of the right scapula, only latterly creating much inconvenience. The shot was removed by Mr. Matthew on the 9th of the present month.

May 1859.

Fifteen wounded by the mutiny in India have arrived during the month, including two cases of amputation,—one of the arm and the other of the forearm.

Surgeon-Major Matthew reports that several contractions of limbs after gunshot wounds have been rectified this month.

Besides the two instances of amputation above noticed, the following cases, not occasioned by wounds in action, were admitted this month, viz., one finger case after accident, one arm case after accidental gunshot wound at target practice, one fore-arm case after fungous growth from the hand.

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In consequence of the indifferent success attending Wützer's operation, noted in previous reports, Surgeon-Major Matthew, in charge of the surgical division, Fort Pitt, was induced this month to make trial of Wood's operation for the radical cure of hernia. He accordingly performed the operation in three instances, and he reports:—"Two of these promise to succeed perfectly, but one patient unfortunately died from peritonitis. The details of these cases are as follow:—

"Colour-Serjeant Titus Hurst, age 42, 45th Regiment, 21½ years; admitted at Fort Pitt, 7th May, 1859, with a right oblique inguinal hernia of moderate size, extending into the scrotum, contracted in Dublin in 1841. Had systematically worn a truss. The operation performed on 11th May, 1859, under chloroform. The suppuration was moderate, and the constitutional disturbance very little. The ligatures were removed on 17th May (end of 6th day). and the wound healed satisfactorily, but slowly. Result, a cure, although, at the date of his discharge, slight fulness of that groin appeared on cough; directed to continue to wear a compress and bandage for at least a month. He was discharged the service, having completed over 21 years' service.

"Private Isaac Norris, 2nd Batt. 60th Rifles; age, 26; service, 8 years and 3 months. Admitted at Fort Pitt, 7th May, 1859, for right oblique inguinal hernia of moderate size, extending into the scrotum, contracted at the Cape of Good Hope on Government works, in 1854. Had systematically worn a truss, but the hernia frequently came down, even when the truss was on; operation done 24th May, 1859, under chloroform; very free suppuration followed in the case, chiefly from the external needle puncture; (he was in the same ward as case No. 3, which ended fatally). The character of the discharge, healthy pus, and unattended with any very appreciable constitutional disturbance. It appeared to come from among the fibres of the external oblique muscle. The ligation was removed on the 29th May (end of 5th day). He was kept in the horizontal position, with compress applied, till the 11th June, when he was allowed up, with compress still applied. On 30th June,—that is, 37 days after the operation,—the gut again PARTIALLY protruded into the canal, and a light truss was put on, but it was considered by the Inspector-General that he would not be fit for further soldiering, and he was discharged the service on 8th July. Although not a perfect cure, this man was much benefitted, as the truss (a very light one) now retained the gut perfectly, and there had previously been great difficulty in keeping it up by any appliance, and I should even hope that a cure may have ultimately followed.

"No. 3,933 Private Joseph Emery, 2nd Battalion 60th Rifles, age 23, service 3 years and 2 months, invalided home from the Cape of Good Hope on account of right oblique inguinal hernia, contracted on the Government works in that colony in the year 1856. He was admitted into Fort Pitt Hospital on the 7th May, 1859: the hernia was of moderate size, and extended into the scrotum. He had always worn a truss, which, however he stated did not always prevent the bowel from descending. On the 24th May, Wood's operation for the radical cure of the disability was performed at noon, the patient being under the influence of chloroform. His bowels, three days previously, had been well cleared out by a dose of castor-oil. In the evening he did not complain of much pain, but an opiate draught was administered.

"*May* 25.—Slept well last night, and now makes little complaint, except of slight cough, which causes some pain in his right groin. The draught to be repeated at night.

"*May* 26.—Is somewhat feverish, but is perspiring slightly about the head and neck; tongue a little furred; cough continues, but is not violent, and is unaccompanied with expectoration. Complains of considerable pain and tenderness about the lower part of the abdominal wall, referred chiefly to the central portion of the hypogastrium. The parts in the right groin are somewhat painful, but not so much so as at the spot above indicated. There is no tenderness of the upper parts of the belly; has had no motion since the operation. Compress and bandage not disturbed.

"*Vespere.*—Still slightly feverish; in fact, much the same as in the morning; opiate repeated.

"*May* 27.—Easier and less feverish, but says he slept little through the night; still complains of pain in the lower part of the abdomen. Bandage and compresss removed; no irritation from the suture in the scrotum (which had been inserted on the completion of the operation); it was, therefore, not disturbed; the aperture through which the ligature emerges looks healthy enough. Belly slightly tense from contained air, probably due to the bowels not yet having been moved. The tenderness in the lower part of the belly persists, and extends more towards the left groin. Tongue slightly coated; urine scanty, and high coloured. The attendant reports that he has made use of but little food since the operation. The compress and bandage re-applied.

"*Vespere.*—About 3 o'clock he vomited twice a small quantity of dark-coloured fluid, which was supposed to be some beef-tea he had taken some little time previously, and he said he felt better afterwards. About 5 o'clock the orderly officer was asked to see him, as he had become much worse. He reported that he found him in a state of partial collapse, which was stated to have come on very rapidly. The pulse was very weak, rapid, and compressible; the skin moist and clammy, inclining to cold; the eyes sunk and surrounded by a dark areola, and he was vomiting a dark-coloured fluid like porter. Some brandy and water was ordered, and I saw him about 7 o'clock; he was then much in the state above described. The belly was very tense and tympanitic; the cough continued, and mucus had begun to collect in the air passages, and the whole surface of the abdomen was excessively tender. It was evident that acute peritonitis had been set up, but the condition of the patient's pulse and skin forbade depletion. The ligature was removed at once, but no pus came away with it; after which the compress and bandage were re-applied; calomel and opium in full doses at frequent intervals were ordered, and brandy and water in small quantities at a time exhibited occasionally. Hot stupes were applied to the abdomen, followed by a large warm poultice, and a turpentine enema was exhibited, which brought away a large quantity of flatus.

"He remained very restless through the night. The surface never became hot, and the skin continued to be bedewed with a cold clammy sweat, while the pulse remained very small, rapid, and compressible. The vomiting of the same dark-coloured fluid continued at intervals. The calomel and opium, brandy and water, beef-tea, and hot applications, were continued, and the enema repeated (again bringing away much flatus); but he sank, and died at 4 P.M. on the 28th instant.

"*Autopsy*, twenty-one hours after death.—*External appearance*: body stout, muscular, and well-formed. *Cranium*: veins of the pia mater and arachnoid much congested; section of the brain presented larger blood-points than are seen in a perfectly healthy brain. Weight of brain, 3lbs. 2oz.

"*Thorax*.—Cavities of the heart filled with fibrinous clots; structure healthy. Weight, 12 oz.

"The trachea and bronchial tubes contained frothy mucous. The mucous membrane of the whole of the air passages much congested. Posterior parts of both lungs congested and gorged with serum; otherwise healthy. Weight of lungs and trachea, 3lbs. 6oz.

"*Abdomen*.—Contained about a pint of turbid serum, with flakes of lymph floating in it. The whole surface of the peritoneum showed lymph-deposit, and the inflammatory action appeared to have been most intense along the mesial line, a little above the pubes. The skin was now dissected off the groin. The external needle-wound (or that through the external pillar of the ring) showed no particular vascularity The internal needle-wound had, after catching the internal pillar and conjoined tendon, been carried into the rectus muscle for about an inch from its outer border. This wound looked unhealthy. The sac of the hernia extended well into the scrotum. On opening it, a constriction was found about an inch and-a-half above its extremity.

"The part below this constriction was vascular, thicker than the upper portion, and coated with soft lymph-deposit on its peritoneal aspect. The portion of the peritoneal lining of the sac, situated above the constriction, did not show signs of active inflammatory action, except that it did not present the glistening appearance proper to healthy peritoneum. The sac had not been entered by either needle-puncture, and no gut was found even in the upper portion of it (or that above the constriction).

"On following up the internal needle-wound (or that through the internal wall of the inguinal canal) into the right rectus muscle, the cavity of a large irregular unhealthy-looking abscess was opened. It was of a considerable extent, occupying, in a perpendicular direction, about 3 inches of the substance of the muscle, and extending towards the left side into the substance of the left rectus, nearly as far as the external border of that muscle. It also extended downwards behind the pubes, between the abdominal wall and the peritoneum: and on lifting away the intestines which lay against the abdominal wall, a little above the pubes, and which were adherent to it, the appearance of a minute aperture presented itself nearly in the mesial line of the body, and as nearly as might be opposite to the centre of the abscess-cavity, leading into the last-mentioned part, although none of the contents of the abscess appeared to have found their way into the abdominal cavity, owing to the resistance of the surrounding plastic effusion.

"*Liver*.—Healthy. Weight, 4lbs. 3oz; gall-bladder full of thick bile; spleen healthy; weight, 7 oz. Stomach and intestines healthy throughout.

"*Remarks*.—On reviewing the case, it would appear that the sac of the hernia had been pushed up before the finger in the operation, so that, with the exception of the 1¼ inches below the constricted portion, it had passed into the cavity of the abdomen, and that this portion had either remained in the canal in front of the finger, or, if the whole sac had passed into the abdomen, it had thus far re-descended on the removal of the finger so as to become constricted by the ligature upon its being tightened. The vomiting of the dark-coloured porter-like fluid, and its obstinate persistance, looked not unlike as if a portion of gut had by some means become constricted. This, however, was after death clearly seen not to have been the case.

"The progress of the case seems to point out that the inner ligature had produced inflammation and the formation of pus in the substance of the right rectus muscle. This would account for the feverishness and tenderness noticed on the 26th. That this inflammation and suppuration then extended to the left rectus muscle, was evidenced on the 27th by the extension of the tenderness towards the left side of the body. The pus would then appear to have been seeking vent towards the bowels instead of outwards, and to have made its way towards the peritoneum, ultimately extending itself between that membrane and the abdominal wall behind the pubes, and there lighting up peritoneal inflammation, as evidenced by the vomiting, set up at 3 P.M. on the 27th, and the rapidly-following abdominal tenderness. Probably the peritoneal cavity became then opened, which would account for the almost sudden supervention of the state of collapse. It would also seem that, after the removal of the ligature, the entire sac had re-descended into the scrotum, sufficiently strong adhesions not having yet been set up to retain the parts in the position they had been placed in, although the compress prevented any gut coming down with it.

"To what are we to attribute the setting up of this too profuse suppuration? The man was a healthy-looking soldier. The appearance of the portion of muscle included in the ligature showed that it had not been pulled sufficiently tight to strangulate it entirely, and so produce sloughing. Two cases of erysipelatous inflammation had, however, shown themselves during the month in the hospital, although in other wards than that occupied by this patient, and the condition of the atmosphere, or other causes producing this affection, may perhaps have had an influence on the result of this case. One of these cases occurred on the 12th, in a man suffering from abscess of the forehead; the other, in a patient labouring under a secondary syphilitic eruption. In both, the disease affected the head and face. It may also be noticed that the stump of an arm from which a small fragment of necrosed bone was removed on the day of the operation in this case, was found on the second day subsequently to present an erythematous blush around the small incision through which it had been effected.

"The case seems to show, that the assertion of Mr. Spencer Wells, in his remarks upon Wützer's operation (vide *Med. Chr. Transactions*, vol. xxxvii., p. 79), viz., that the sac cannot be pushed up before the finger, unless in very recent herniæ, but that it must, of necessity, be invaginated, is incorrect. Mr. Wood, in his first published account of his operation (*Transactions King's Coll. Med. Soc.*, vol. ii., 1857–58), asserts that the sac is not opened in his operation, as, indeed, it was not in this instance; but he informs me that he now believes that, in old hernia, it is usually transfixed. This, however, I apprehend, must entirely depend upon the amount of the connections which the sac has formed in the scrotum, and this probably varies much in different cases. It seems not unlikely that, when a truss has been systematically worn from the first, the whole of the sac may usually be returnable into the abdomen.

"A radical cure of this disability is a matter of vast importance to the service, but the result of this case hardly warrants our continuing to perform the operation."

The invalided wounded during the mutiny commenced to arrive at the Invalid Depôt in April 1858, and during the fifteen months since elapsed, the arrivals of this class of invalids have averaged 50 per month. The total, inclusive of the 54 arrived during the month under report, is now 743, of which number 178 are cases of amputation or excision. June 1859.

The total above referred to includes only Cavalry and Infantry of the Line; but thirteen of the Royal Engineer corps, wounded during the mutiny in India, have also arrived at Chatham, and have been disposed of at the head-quarters of their corps at this station. A nominal and descriptive roll of eight of these thirteen cases was appended to the monthly report for January last, and a similar roll of the five arrived since is appended to this (vide p. 330). The total thirteen cases includes only two amputation cases, both being of the arm after gunshot wound.

During June 1859, the addition of two cases of gunshot fracture of the femur to those previously arrived, led to the observation of the very large proportion of these cases to the total wounded, and on the striking difference in the proportion of these cases to thigh stump cases, as compared with the number and proportion of such cases furnished by similar returns of invalided wounded from the late war in the Crimea, contained in the Chatham Annual Medical Report for 1856–57. The number and proportion which these gunshot fractured femur cases bear to each other and to the total invalided wounded, seem to be of statistical value, as bearing on the question of the expediency, or otherwise, of amputation in that description of wound.

In the following tables, these statistics are set forth, together with similar data collected from the records at Fort Pitt, of the invalided of preceding wars in India.

TABLE 1.—Showing the Number of Invalids by all Wounds and of cases of Gunshot Compound Fracture of the Femur, and of Thigh Stump cases; passed through the Invalid Depôt, Chatham.

	Total by all classes of wounds.	Total cases of Gunshot Compound Fracture of Femur.	Total Thigh Stump cases.	Remarks.
Sutlej—				
H. M.'s 29th only	47	2[a]	2[b]	[a] Exclusive of one dead of erysipelas when at Fort Pitt. [b] One of these recorded as lower third, in the other the third not stated.
All Corps, H. M's. Service ..	357	6[c]	18[d]	[c] Whether the fracture was completely through the shaft is doubtful in one of these cases. [d] One only specified as in upper and one in lower third.
Punjaub—				
All Corps, H. M.'s Service.. ..	129	..	6[e]	[e] The third specified only in one case and that in the middle third. [f] In middle third.
Persia—				
All Corps, H. M.'s Service.. ..	4	1[f]	..	[g] Exclusive of one dead at Gravesend. In the cases of recovery the trochanter is fractured in .. .. 2 cases. Upper third in 3 „ Upper as well as middle third in 1 „ Junction of upper and middle third in 1 „ Middle third in .. 1 „ Junction of middle and lower third in 1 „ Lower third in .. 1 „ Total 10
Mutiny of Bengal Army—				
All Corps of the Line, H. M.'s Service.. ..	743*	10[g]	13[h]	
Royal Engineer Corps	13*	1	..	[h] Exclusive of one dead at Gravesend.
Preceding Indian wars	1246	18	37	[i] In upper third .. 3 cases. In junction of upper and middle third 1 „ In middle third .. 4 „ In junction of middle with lower third.. 1 „
Crimea—				
Of Cavalry and Infantry of the Line	2296	9[i]	62[j]	[j] In upper third .. 3 cases. In junction of upper and middle third.. 1 „ In middle third .. 15 „ In lower third .. 3 „ In third not stated 40 „

* Probably a few more wounded may arrive from India, but not a sufficient number materially to disturb the relation of the above figures.

TABLE 2.—Proportion of cases of Gunshot Compound Fracture of the Femur to Thigh Stump cases, and to all cases of Wounds and Injuries in Action, passed through the Invalid Depôt at Chatham; also the proportion of Thigh Stump cases to total of all classes of wounded.

	Gunshot Compound-fractured Femur cases to		Proportion of Thigh Stump cases to total cases of Wounds and Injuries in Action.
	Total cases of Wounds and Injuries in Action.	Thigh Stump cases.	
Sutlej Campaign, 1845-46—			
Her Majesty's 29th Regiment only ..	1 to $23\frac{1}{2}$	2 to 2	1 to $23\frac{1}{2}$
All Regiments, H. M.'s Service ..	1 to $59\frac{1}{2}$	1 to 3	1 to $19\frac{11}{12}$
Punjaub Campaign, 1848-49—			
All Regiments, H. M.'s Service ..	1 to 129	1 to 6	1 to $21\frac{1}{2}$
Persian Campaign, 1856-57—			
All Corps, H. M.'s Service	1 to 4	1 to none	none to 4
Mutiny, Bengal Native Army, 1857-58—			
All Regiments, H. M.'s Service ..	1 to $74\frac{3}{10}$	1 to $1\frac{2}{10}$	1 to $57\frac{3}{4}$
Royal Engineer Corps	1 to 13	1 to none	1 to 13
Preceding Indian Wars	1 to $69\frac{4}{15}$	1 to $2\frac{1}{15}$	5 to $33\frac{11}{17}$
Crimea—			
Cavalry and Infantry of the Line ..	1 to $255\frac{1}{3}$	1 to $6\frac{3}{5}$	1 to $37\frac{1}{51}$

The preceding tables show, of the Indian wars as compared with the Crimean war, that the thigh stump cases arrived home from India are a fraction more numerous than those from the Crimea, in proportion to the total arrived by all wounds; and that the recovered cases of gunshot fracture of the femur also arrived are, in proportion to the total wounded, four times more numerous from India than from the Crimea. In other words, the proportion of thigh stump cases being so nearly the same, the gunshot fracture of the femur cases from India, over and above the proportion from the Crimea, may be received as representing the proportion of cases of this description of wound lost there by amputation, or by less favourable circumstances of service. The difference, I believe, is to be explained by the better appliances and means attending field hospitals in India and to the less frequent practice there of amputation in this description of wound. The difference is not to be explained by difference of missiles, for in the Peninsular war, where no other than the 16 to the pound bullet was used, the impressions of surgeons experienced in the surgery of that war was, that in only few exceptions should a gunshot fractured thigh not at once be amputated. This rule greatly influenced the practice of surgery in the Crimean war, and hence, in a considerable measure, I believe, the less favourable results thence than from the mutiny in India, when surgeons were not only deterred from amputation of the thigh by the Crimean experience of the fatality attending that operation, but were more inclined to attempt preservation of the limb by the better means at hand for the conveyance and treatment of such compound fractured thigh cases.

Further, it is to be observed, that only one-fourth of the total thigh stump cases are to be considered as amputations after gunshot compound fracture of the femur; and this being the case, the number thus wounded in the Indian mutiny, who have recovered with the limb on, is eleven, whilst the number recovered after amputation for this description of wound, is only between four and five. The records of thigh stump cases amongst the wounded from the Crimea, passed through the Invalid Depôt, Chatham, rarely give the nature of the injury for which the amputation was performed, and the part of the shaft through which the bone was sawed is only recorded in 22 of the total 62 cases.

I subjoin brief extracts of ten* of the cases of gunshot compound fracture of the femur, and of the thirteen thigh stump cases referred to in the preceding remarks.

ABSTRACTS of ten cases of Gunshot Compound Fracture of the Femur.

	Rank, Name, Regiment, Age, and Service.	Place and date of receipt of Wound.	Description of Wound, and site of Fracture.	Results, as observed at Fort Pitt.
1	Private Patrick Carty, 64th Regt., aged 28. Total service 10.	On the advance to Lucknow 29 July, 1857.	Musket ball penetrated right thigh in region of trochanter major, fracturing the bone at or just below that process, and again at middle third, where the ball appears to have lodged.	April 1858.—Wound long since healed, and fractures firmly united. Limb shortened about 2½ inches, but in other respects good, and he walks well, with little lameness, and without crutches or stick. Sent to modified duty, 6 Sept.—Discharged to pension, 22 Dec., 1859, by Horse Guards' order.
2	Private John Ashworth, 53rd Regt., aged 29. Total service $9\frac{4}{12}$.	On the 1 Nov., 1857.	Musket ball perforated right thigh, fracturing the femur in its upper third.	July 1859.—Wounds healed and bone firmly united, leaving so good a limb that he was sent to modified duty on 6 Sept. The shortening was under 2 inches. June 1859.—Limb, with the exception of shortening, perfectly good, but he is now discharged to pension, being unfit for all duties.

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* The eleventh case is that of Sapper Charles Bones, R.E. (*vide* p. 330).

	Rank, Name, Regiment, Age, and Service.	Place and date of receipt of Wound.	Description of Wound, and site of Fracture.	Results, as observed at Fort Pitt.
3	Private Joseph Hewitt, 52nd Regt., aged 27. Total Service $9\frac{4}{12}$.	At Goodespore, 12 July, 1857.	Musket ball penetrated front of left thigh fractured the femur in its upper third and was cut out behind at lower edge of glutæus.	July 1858. — Wounds healed, bone firmly united, 1½ inches shortening; but there remains a good useful limb. Discharged to pension, 22 July, 1858.
4	Corpl. Edward Collins, 75th Regt., aged 32. Total service $14\frac{3}{12}$.	Delhi, 8 June, 1857.	Perforating musket ball wound, fracturing the femur in its upper third. Ball recorded to have been extracted.	July 1858. —Wound healed, bone united, ends overlap, and callus large; 2½ inches shortening; has, nevertheless, a good useful limb, and he walks well. Passed to modified duty, 6 Sept., 1858, but discharged to pension by Horse Guards' order.
5	Private James Burke, 53rd Regt., aged 26. Total service $9\frac{11}{12}$	Lucknow, 16 Nov., 1857.	Musket ball penetrated front of left thigh, fractured femur at middle third, and was cut out at inner and posterior aspect of limb.	August 1858.—Wound healed, fracture united, 1½ inch shortening. Has a good useful limb, and walks so well that he was sent to modified duty on the 16 Sept., 1858. Discharged to pension, 10 June, 1859.
6	Private Samuel Hunter, 93rd Regt., aged 21. Total service 3.	Cudjee, 1 Nov., 1857.	Musket ball perforated left thigh, fracturing the bone at junction of middle and lower third.	September 1858.— Apertures of entrance and exit of ball healed, but there is a sinus through which dead bone is detected; 1 inch shortening; great deposition of callus, obstructing motions of knee joint. Discharged to pension, 5 Dec. 1858.
7	Private William Cunningham, 1st Bat. 8 Foot, aged 31. Total service $13\frac{6}{12}$.	Dehi, 14 Sept., 1857.	Gingall ball passed across front of left thigh, fracturing the femur at junction of upper and middle third.	April 1859. — Wound healed. This is an unfavourable specimen of recovery with the limb on, because of the fractured ends having been allowed to overlap and unite at an angle, causing 4¾ inches shortening; but with the help of a mechanical contrivance furnished by Mr. Bigg, the man is able to get about. Discharged to pension.
8	Private Samuel Shaw, 53rd Regt., aged 36. Total service $15\frac{6}{12}$.	Lucknow, 23 Feb., 1858.	Perforating musket ball wound, fracturing the femur in the lower third.	May 1859.—Wound lately healed, bones firmly united; 1½ inches shortening; knee joint stiff; walks, however, very well. Discharged to pension, June 1859.
9	Private George Williams, 24th Regt., aged 29. Total service 10.	Umritsir, 18 Oct., 1857.	Musket ball entered right groin below Poupart's ligament, external to the vessels, and passed out behind great trochanter, fracturing the femur, probably through the trochanter.	June 1859.—Opening of entrance and exit healed, but a sinus open behind, leading to dead bone. There is about 1¼ inches shortening. The man remains in Fort Pitt, having lately suffered erysipelas of the injured limb, which no doubt, however, will be eventually good and useful. He is now in good health.

	Rank, Name, Regiment, Age, and Service.	Place and date of receipt of Wound.	Description of Wound, and site of Fracture.	Results, as observed at Fort Pitt.
10	Private John Curtis, 86th Regt., aged 35. Total service 14$\frac{3}{12}$, of which 13 years in India.	Mendesoor, 23 Nov., 1857.	Musket ball entered left groin, and passed out obliquely near great trochanter, fracturing the femur just below that process.	June 1859.—Necrosis of fractured ends; openings not quite healed; 3¼ inches shortening; health good. This soldier remains at Fort Pitt to be fitted with an apparatus like that given to private Cunningham.

Abstract of thirteen Thigh Stump cases, referred to in the preceding remarks.

1. John Smith.—Amputation at junction of middle and lower thirds after shell wound. Site not specified.

2. Hugh Nelson.—Amputation at junction of middle and lower third after cannon-shot smash of knee joint.

3. Edward Byrne.—Amputation centre middle third after musket-ball wound of thigh.

4. John Kehoe.—Amputation at junction middle and lower thirds (the primary was in lower third, but a secondary removal of bone became necessary) after musket-ball wound, but not stated where; probably was of thigh or knee joint.

5. John Nolan.—Amputation middle third after grape-shot smash of knee.

6. Thomas Ryan.—Amputation middle third after grape-shot wound of knee.

7. Bernard Allen.—Amputation upper third after rifle-ball wound, but site not stated.

8. Thomas Dixon.—Amputation middle third after cannon-shot wound of knee.

9. George Lear.—Amputation at middle third after fracture of femur by musket ball.

10. James Nolan.—Amputation middle third after fracture of femur by musket ball.

11. M. Gearen.—Amputation middle third after fracture femur by musket ball (he says struck calf of leg, and the operation performed one month afterwards).

12. G. Donovan.—Amputation middle third on account of musket-ball wound knee joint, with fracture of internal condyle (femur or tibia?).

13. J. Donaldson.—Amputation middle third after cannon-shot smash of knee (?) bones of leg (?).

The following extract from the report of Surgeon-Major July 18 Matthew, in charge of the surgical division, Fort Pitt, gives all necessary details with respect to invalided wounded arrived this month:—

"Total number of Indian wounded arrived during the month has been thirty-eight.

"Among these were seven cases of amputation, viz., two of upper arm, two of fore-arm, one of thumb and its metacarpal bone, one of finger, and one a Chopart's operation on the foot; the last named presented the heel very much carried backwards, so as to bring the line of incision nearly on to the ground when the man attempted to put the stump to use in progression.

This, I think, can be remedied by division of tendo-achillis, and the adaptation of an apparatus, as soon as a small abscess over the heel shall be thoroughly sound.

"One excellent case of conservative surgery presented itself. J. Conolly, 37th Regiment, was wounded on 26th October, 1858, at Shahabad, by two musket balls or slugs, one of which shattered the metacarpal bone of the right thumb, the second passing through the ball of the thumb. Notwithstanding the amount of injury to the bone, the thumb has been preserved; and although the power of flexing it is totally lost, it is most useful as an opponent to the fingers.

"A curious case may be noticed in the person of J. Skinner, 6th Dragoon Guards, who was wounded on 24th November, 1858, by a musket ball which passed through the left popliteal space, apparently injuring the tendons of both hamstrings, and wounding the artery; the superficial femoral was tied on the same day, apparently on account of hæmorrhage. The knee is now contracted to nearly a right angle.[*]

"W. Marsh, 78th Regiment, received a severe fracture of right femur on 2nd March, 1858, by masonry moved by round shot, probably comminuted, but not compound, although a large flesh wound was inflicted. The limb is now four inches short, and presents much deformity, although probably it will admit of the adaptation of an apparatus.

"James Moore, 75th Regiment, was wounded at Delhi on 18th July, 1857, by a musket ball through the left side of the thorax, which must have perforated the lung, although perhaps not deeply. He has so far recovered that he was sent to his regiment for modified duty, in accordance with letter of D.A.G., dated 20th August, 1858.

"As usual, many of the gunshot wounds had been allowed to become followed by great, and in some instances irremediable, contraction of limbs. Among which, I may specially instance P. Ryan, 52nd Regiment, and Michael Coney, 1st Battalion 60th. In many instances, perhaps, in part this could not be avoided; but from the great benefit received by the majority of the cases on the application persevering and systematic extension after arrival here, I am persuaded that a little attention and ingenuity during an earlier period of the treatment, would have saved pain to the patient, and time and trouble to the surgeon."[†]

ept., 1859.

The number of invalids from India on account of wounds arrived at this station during September, is twenty-eight, including the following:—

Shoulder-joint	2
Thigh	1
Leg	1
Thumb..	1

Surgeon-Major Matthew remarks that several of the recently arrived cases are of great interest, the chief of which he notes as follows:—

"James McCullen, 1st Battalion 13th, was wounded on 26th October, 1858, at Jugdespore, by what appears to have been a musket ball, which entered the skull about one inch above the right supra-orbital ridge towards its outer part, and is supposed to be lodged. A very imperfect account of the case has been forwarded, but from the man's account, although stunned at the time, he appears to have suffered but little inconvenience. There is now a small opening, three-quarters of an inch above the outer angle of the eyebrow, with the appearance of much bone having been lost around it, as the surface of the skull for a space of some two inches in diameter seems flattened. No dead bone can be felt in the small opening now remaining, nor any foreign body. There is a scanty discharge of well formed pus. The wound bleeds very readily on being touched with a probe, but no brain pulsations are visible, although there is no doubt but that the instrument passes into the cavity of the skull. The man's intellect appears to be impaired, and he seems to be slightly deaf. He, however, makes little complaint, and says he feels well enough, but that he has occasional headache.

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[*] Mr. Matthew states that this contraction was subsequently "rectified very successfully."

"2. James White, 3rd Battalion Rifle Brigade, was wounded on 8th October, 1858, at Sandelah by a musket ball, which entered four and a-half inches above the nipple, and one and a-half to the right of the middle line in front, and made exit about the centre of the body of the scapula, four inches to the right of the spinous process of the vertebræ. The ball must have passed directly through the upper lobe of the right lung. Both openings are now soundly healed. The ball on entrance seems to have gone between the ribs without wounding them, but at its exit a hole in the scapula can still be felt. The right lung now works well, but that side of the chest is scarcely so much expanded on inspiration as the opposite, and he says he feels shortness of breath on exertion. There is, however, no appreciable dullness on percussion. As to the mode of treatment adopted nothing is said; but the patient states that he was not bled, and had no leeches applied. He bears no marks of either local or topical bleeding. The man was previously wounded in the Crimea by a musket ball in the left shoulder, which seems to have occasioned partial fracture of the left scapula.

"3. John Gerry, 2nd Battalion 60th, was wounded at Nonea, in Jugdespore, on 21st October, 1858, by a musket ball, which, entering the left thigh in the middle third at its inner aspect, must have passed very close to the artery, and fractured the femur at the junction of its middle and lower thirds, remaining lodged in the limb. The bullet was about six months afterwards cut out of the back of the thigh, opposite the central third. Two fragments of dead bone were subsequently removed from the same opening, which is now soundly healed. The femur is firmly united, and the leg shortened 3½ inches. The wound of entrance is, however, open, and a fragment of dead bone can be detected at the bottom. There is also another opening in front of the thigh, about 2½ inches above the patella, towards the outer aspect of the limb, from which a long sinus leads upwards, apparently to the seat of the dead bone felt from the opening of entrance. The man will have a most serviceable limb when fitted with a high heeled boot.

"4. Cormick Walsh, 88th Regiment, was wounded on 21st October, 1858, at Birwah, by a musket ball, through the back of right thigh, passing across the popliteal space from without inwards, and apparently wounding the nerve, but not injuring the bone. The wound is healed; but, probably chiefly on account of the nerve injury, the leg is atrophied, and the foot remains in the extended position, the patient asserting that any attempt to flex it gives him excruciating pain in the whole limb.

"On the same day the patient received a second wound by a bullet in the left leg, just below the tuberosity of the tibia, which partially fractured that bone, and made its exit over the fibula. This wound is soundly healed, and its consequences are of comparatively little moment.

"5. Serjeant Michael Kearnan, 88th Regiment, was wounded on 21st October, 1858, at Burwah, by a musket ball, which entered over the outer margin of the left patella, and made its exit over the outer hamstring. The wound is now soundly healed. The limb is somewhat atrophied, apparently from disuse, but the motions of the joint are perfect. It is possible that the cavity of the joint was not opened; but from the position of the cicatrices of entrance and of exit, it seems difficult to conceive how this could have been the case; and, as usually happens when an instance of wound or injury of more than common interest presents itself, the documents forwarded with it are almost entirely destitute of information. If the joint were opened, the result of the case may be looked upon as most successful, for, as before stated, the motions of the joint are uninjured, and the limb will almost certainly recover its strength under judicious exercise.

"6. George Lafferty, 79th Regiment, was wounded at Lucknow on 11th March, 1858, by a musket ball, which, entering the outer part of the middle third of right leg, seems to have passed directly backwards between the bones, without injuring either of them, and made its exit about the centre of the calf. The wound is soundly healed, and although the man is still lame, this appears to be simply the result of his not having been instructed to use the limb. Since admission here, he is rapidly improving, his crutches having been taken from him, and he now gets about quite well with the aid of a stick.

"This patient was also the subject of a large hydrosarcocele; the hydrocele has been injected with iodine, and cured, and the sarcocele is now reduced within very moderate limits, and promises a perfect cure.

"7. Patrick Kennedy, 1st Battalion 5th, was wounded on 2nd December, 1858, at Mohee, by a musket ball, through the web of the ring and middle fingers, left hand; the 'adjacent phalangeal and metacarpal bones' are stated by the surgeon to have been 'shattered, and some small pieces of bone came away.' I call attention to this case, because it well illustrates the malpraxis to which, I am sorry to have to say, the abuse of the fashionable term, 'Conservative Surgery,' often leads. If both the metacarpal bones were 'shattered' as stated, there can be no doubt the finger should have at once been amputated, and the shattered bone cleared away. Had this been done, the probability is that the forefinger and little finger would have remained useful. As it is, however, all the fingers are now stiff in the extended position, the ring finger by bony anchylosis to the metacarpus, and the other fingers by adhesion of tendons. The hand is almost utterly useless, and there is little or no prospect of improvement. It appears to me that this is 'Conservative Surgery' in the wrong direction.

"In the case of Chopart's operation, noticed in the July report as presenting a painful cicatrix on the aspect requiring pressure in progression, the tendo-achillis has been divided, and the heel brought forcibly downwards, so that the weight can now be taken upon the extremity of the os calcis, and a boot with an apparatus so adapted as to prevent a return to the faulty position, has been ordered. It is, however, doubtful if this case were a genuine instance of Chopart's operation, as the astragalus seems to have been removed, but it was sent home under the above designation from India.

"In one instance, where the elbow had been allowed to become set in nearly the straight position after a sabre wound over the head of the radius, the joint has been flexed under chloroform to a right angle, a much more convenient position for use of the limb. In another instance, the position of a contracted finger has been partially rectified after division of the tendon; and in a third case of contraction of the knee-joint (Skinner, Case No. 2, July report), the limb was extended under the influence of chloroform. It appears, however, that the peroneal nerve is engaged in the cicatrix, and after the patient's recovery from the chloroform insensibility, the pain experienced was so great that the extending splint had to be removed. I purpose, however, renewing the attempt, combining subcutaneous section of the nerve with forcible extension."

A case of trismus, apparently of idiopathic origin, occurred in the Royal Engineer Corps. Surgeon-Major Ferris, the medical officer in charge, gives the following details of this instance of that rare form of the disease:—

"My hospital serjeant, Hamilton, had rather a sharp attack of trismus. I cannot account for its origin, unless it arose from exposure on a very windy day in a third class railway carriage, or from a small cut in the finger received accidentally three days before from a cupping instrument. He was unable to open his mouth in the least for two days, and it was partially closed for eight days, with great difficulty of deglutition, and shooting pains extending down the right arm. On its first appearing, the neck was well fomented and leeched, and two purgative enema were administered, which freely relieved the bowels. Little benefit was derived from the treatment, when he was ordered half-grain doses of morphia every two hours, with camphor mixture, and a strong liniment of chloroform and soap liniment rubbed in freely into the neck. After the eighth dose of morphia the disease began to yield, and the spasms gradually subsided. It of course left him very weak, as he was unable to swallow for days without great difficulty. He is now quite well. The serjeant was treated in his own quarters in the hospital."

October 1859

Sixteen wounded invalids from India were received this month, including three cases of minor amputations.

Of these sixteen, Surgeon-Major Mr. Matthew notices the following as the most interesting:—

"Private Edward Nevin, 86th Regiment, was wounded at Jhansi, on 6th April, 1858, by a musket ball, which perforated the left triceps muscle from without inwards, apparently grazing the humerus, and thus obtaining a rotatory motion, then entered the left side of the belly over the eleventh rib, does not appear to have injured the rib, although this point is somewhat doubtful, but to have hugged the skin, and made exit towards the opposite side of the body, after a passage of 9 inches, passing through the muscles arising from the internal condyle of the humerus of the right forearm. All the wounds were soundly healed, but that in the arm has been followed by complete paralysis of extension of the little finger, and partial paralysis of the ring-finger of the left hand.

"John Keane, 86th Regiment, was wounded at the Hill-fort, Chandaree, on 17th March, 1858, by a musket ball, which touched the skin over the triceps of left arm, then entered the back, and, after a course of 5½ inches, made exit close to the spinous processes of the vertebræ. The account of the case, furnished by the surgeon of the regiment, says: 'Wounding the lung, large portions of bone came away from the wound near the spine, and the wounds were seven months open.' It is, however, to be noted, that the surgeon who wrote this account did not see the case until long after all the wounds were closed; and from what can now be seen, there seems great reason to doubt if the lung was wounded at all, except, perhaps, by the contusion, and it seems even improbable that the chest cavity was opened. No deficiency of rib can be felt, and the ball does not seem to have touched the spinous processes of the vertebræ. The man is fat and hearty, and the lung works normally. After examination by a Board of Medical Officers, this man has been sent back to his regiment for duty, it being believed that the surgeon of the regiment had too hastily adopted the man's statements with respect to the circumstances of the case. Among the symptoms enumerated by the patient, as existing on his admission at Fort Pitt, were great difficulty in swallowing, pain in the left side, dyspnœa, and palpitations; of the existence of any or all of which there was not the slightest evidence beyond his own assestion."

Amongst minor operations performed by Mr. Matthew this month, in the surgical division, he details the following case, which was complicated by a slight attack of erysipelas:—

"T. Smith, 80th Regiment. Necrosis of a part of the os calcis had taken place, which he attributed to a gunshot injury received in 1845. An incision for the removal of the dead bone was made on the 11th October, on the outside of the foot, when the greater part of the posterior portion of the bone was found to be diseased, but the insertion of the tendo-achillis was thought to be sound. The diseased bone was freely removed with the gouge. A few days after the operation, a slight attack of erysipelas supervened, which it is believed has led to the death of a further portion of the bone, but to what extent this has proceeded is yet doubtful. Apparently it is not large, and will probably separate with the suppuration which is now freely established."

w. 1859. Only one wounded invalid from India has arrived this month.

An abstract of ten cases of gunshot compound fracture of the femur arrived at Fort Pitt, amongst the wounded from India, by the late mutiny of the Bengal Native Army, is entered in the report for last June, with reference to the proportion of these severe fractures of the femur to the total by all classes of wounds, and to the thigh stump cases, also included in that total. Since the date of that report an additional case of gunshot fracture of the femur, and also one of thigh stump, have arrived amongst the wounded from India, which cases are noticed in the report for September last. To the twelve cases of gunshot fracture of the femur already referred to, there is now to be added another case, about the nature of which there has hitherto been some doubt. The case alluded to is that of Private James Moore, 1st Battalion 24th Regiment, noted in the report for April last as probably a case of necrosis of head and neck of the femur following gunshot wound of the great trochanter. Surgeon-Major Matthew, in his Surgical Division Report for the month just ended, expresses now a decided opinion that this case is another instance of gunshot fracture of the femur. The following are Mr. Matthew's remarks:—

"J. Moore, 1st Battalion 24th Regiment, vulnus sclop. I have fully satisfied myself that this was an instance of gunshot fracture of the upper part of the femur. The upper part of the thigh and buttock have now become much consolidated; and although a sinus in the buttock remains open and leads to a fragment of dead bone which is not yet loose (although the wound was inflicted in July 1857), the parts are in a quiescent state, and the man having been fitted with a high-heeled boot, is able to get about with facility by the help of a stick, and is now in good health, and free from the ague, from which he formerly suffered so severely."

Besides several cases of minor operation, Mr. Matthew reports the following, in which he performed Symes' operation on the urethra:—

"Private William Rogers, 1st Battalion 8th Regiment, suffering from perineal fistula and obstinate elastic stricture, has been submitted to the eration of perineal section as performed by Mr. Syme, the perineal fistula ing at the same time laid freely open. The case promises well, although mplicated with disease of the neck of the bladder, and perhaps of the ostate."

Surgeon-Major Dr. Maclean notices a case of chronic synoitis of the left knee-joint, in which a considerable quantity f fluid was collected, and attended with great swelling of the int. A small trocar was introduced in an oblique direction, nd fluid, to the extent of ʒxiv drawn off. The joint was en carefully bandaged, and fixed in a straight position by splint. The case is going on remarkably well. The joint as now nearly its normal size and appearance.

Only five cases of wounds have been admitted this Dec. 1859. onth, making the total received during the mutiny in ndia, who have arrived at the depôt up to this date, 832. ne amputation of the leg, and one of the finger, were mongst the five recent admissions; 195 of the above total ounded are cases of amputation or excision.

Surgeon-Major Matthew reports, that in one of the cases rrived during the month, "the bullet passed through the elvis, entering near the left trochanter, and making its xit on right side, near the same process of the corresponding emur. It appears to have wounded the rectum and the acrum in its transit, and to have inflicted some injury on he bladder, the nature of which is still doubtful."

In another case, "a grape-shot has carried away the reater part of the right maxillary bone, displaced the right alar bone, and fractured the right zygoma. The left uperior maxilla and left ramus of the lower jaw are also actured. The deformity is much less than might have been xpected, but the left superior maxilla has been displaced ito the centre of the mouth, and the teeth consequently annot be brought into contact."

ROYAL ENGINEER HOSPITAL, BROMPTON.

NOMINAL and Descriptive Return of Men of the Royal Engineers, Invalided from India in consequence of Wounds, and Injuries received during the Mutiny in India.

Rank.	Names.	Disease, &c.	Date of Admission into this Hospital.	Remarks.
Sapper..	Thomas Wilson .. .. Æt. 21. Service, 2 years 5 months.	Vulnus Sclopitorum.	16th June, 1858.	"Gunshot wound of head, 2½ inches above left ear, received in Col. Powell's Action, 1st November, 1857. The ball was extracted 48 days after injury. Seven small pieces of bone have come away; the wound is granulating, and the patient doing well. His wound incapacitates him for service in India. The pulsation of the brain is seen at the bottom of the wound.—Calcutta, 15th January, 1858." On his admission into this Hospital the wound was open and discharging from a surface about the size of a fourpenny piece; the scalp adherent in the neighbourhood. The patient complaining of giddiness and pain of head. Discharged the Service.
Sapper..	Henry James .. .. Æt. 21. Service, 2 years.	ditto.	9th July, 1858.	"Received a gunshot wound behind right knee-joint, at Lucknow, 13th November, 1857. The wound has quite healed, but the joint has been allowed to become quite stiff, and to remain bent, which incapacitates him for a time for service. —Cawnpore, 15th January, 1858." On his admission, on arrival here, there is inability to extend the joint fully; flexion of joint perfect; the bullet remaining in the neighbourhood of the joint appears doubtful. Employed on office duties.
Sapper..	Henry Walsh .. .. Æt. 24. Service, 2 years 6 months.	Vulnus Sclopitorum. Amputation of right arm.	9th July, 1858.	"Wounded by musket ball at relief of Lucknow, 16th November, 1857. The ball passed through the humerus just above elbow, shattering the bone. Extensive inflammation and suppuration amongst tendons of the forearm followed by exfoliation of humerus. The bone has been united, but the forearm remains permanently fixed in a semiflexed position; fingers and hand powerless.—Cawnpore, 12th February, 1858." It was necessary during the voyage home to remove the limb. Amputation on 18th May at upper third of humerus; on arrival here the stump had nearly healed. Discharged the Service.

Serjeant	Edward Holman .. .. Æt. 28. Service, 12 years.	Vulnus Sclopitorum. Amputation of right arm.	16th Aug., 1858.	"Wounded at Lucknow, on 21st November, 1857, by musket ball in right elbow-joint and forearm. It was necessary to amputate, near shoulder, on 17th Dec." On his admission here the stump, which had healed, had lately broken out afresh, and there is evidence of a piece of dead bone attached to the extremity of the shaft, which keeps up the irritation. Employed on office duties.
Sapper..	Patrick McMahon	Vulnus Sclopitorum. Loss of right eye.	16th August ..	"Received a wound from hail shot, in the right eye, at Cawnpore, on 1st December, 1857. The contents of the eye escaped, and the lids, especially the lower, were much torn, and small portions of bone have come away from time to time." Discharged the service.
Sapper..	James Bain.. .. .. Æt. 23. Service, 2 years.	Vulnus Sclopitorum. Compound fracture of lower jaw.	16th August ..	"A round shot striking a pick-axe sent a piece of latter against his chin, causing a compound fracture of the lower jaw, at Cawnpore, 6th December, 1857. A small pieceof bone was extruded lately from the wound, which is on the anterior surface of chin, about the size of a shilling, and discharges healthy pus." Taken into hospital here for further treatment.
Sapper..	Oliver Morris .. .. Æt. 22. Service, 2 years 7 months.	Vulnus Sclopitorum. Gunshot wound of right leg treated.	16th August ..	"Bullet penetrated outer side of calf of right leg, on march to Lucknow, at Mawatgungu, on 13th February, 1858. The bullet was immediately cut out on opposite side. There has been profuse discharge from both apertures, greatly debilitating the patient." Employed on office duties.
Serjeant	John Campbell .. .. Æt. 41 years 6 months. Service, 19 years.	Contusio lumborum.	26th Sept. ..	"Received a contusion of the lumbar region by falling down a well, 42 feet deep, on 27th December, 1857, about 40 miles from Cawnpore, on the road to Futtyghur; was taken to R. E. Field Hospital, where he had hæmaturia for about a month, during which time his lower extremities were paralyzed. He, also, for two months passed blood by stool, and still continues to do so at irregular periods, with nervous trembling and pain of lumbar regions on walking." Sent on recruiting service.

HENRY BRISCOE, M.D., *Surgeon, Royal Artillery.*

RETURN of Men of the Royal Engineer Corps Invalided from India on account of Wounds, &c., received during the Mutiny.

Rank.	Names.	Disease.	Remarks.
Sapper..	William Pugsley .. .. Æt. 24. Service, $8\frac{1}{12}$.	Vulnus Sclopitorum	This man received a musket ball in his wrist (right), on the 13th February, 1858, accidently. This took place at Lucknow. Three fingers remain stiff and useless and bent into the palm of the hand. I think it is a fit case for a Medical Board.
Sapper..	Abraham Wills .. .. Æt. 24. Service, $3\frac{9}{12}$	ditto.	On the 11th March, 1858, at Lucknow, in an engagement, this man received a musket ball through the left thigh. The wound at first proceeded most favourably, but after some weeks he suffered acute pain in the limb, extending up to the hip-joint. Leg is considerably shortened, and knee contracted. He is also a fit subject for a Medical Board.
Sapper..	Charles Bones .. .. Æt. $29\frac{6}{12}$. Service, $11\frac{11}{12}$.	ditto.	On the 22nd January, 1858, at Awah, East Indies, received a bullet in the left thigh, entering on the inner side and fracturing the thigh bone directly below the trochanter. A large abscess formed, which was opened on the outer surface of the thigh. The bullet has never been found, and the wound still discharges. Several pieces of bone have come away. The limb is very considerably shortened. I should say upwards of three inches. He will never be fit for service again.
Sapper..	Jonathan Williams ..	Vulnus Incis. ..	This man, at Kotch, East Indies, received a tulwar wound on the head, extending from the right temple towards the centre of the head; several pieces of bone came away afterwards. He still complains of giddiness and neuralgic pains, but looks fat and healthy. He is doing light duty at present.
Sapper..	Robert McLay	Vulnus Sclopitorum	On the 3rd April, 1858, at Jhansi, East Indies, he was struck by a musket ball on the left side of the head. Small pieces of bone were removed at the time, and some were discharged afterwards. He still complains of giddiness and pain in his head. He is now in hospital suffering from int. fever.

(Signed) GEO. F. FERRIS, *Surgeon-Major.*

X.

HOURLY OBSERVATIONS on the Amount of WATERY VAPOUR and of CARBONIC ACID in the ATMOSPHERE of some of the WARDS at FORT PITT, with the Windows closed and opened.

By ALBERT A. T. GORE, M.D., *Medical Candidate for the Army,*
and
J. G. PILCHER, M.R.C.S., *Medical Candidate for Her Majesty's Indian Service.*

FIRST EXPERIMENT: Ward 6.—November 14, 1860.

Twenty-two patients in ward; windows closed; two fires and one gas-light burning; external temperature, 48½°; raining slightly; cubic space of ward, exclusive of furniture, 19,267·2 cubic feet, giving 875·7 cubic feet for each man. The observations were taken each hour during the night on the hygrometric conditions of the ward and external air, from 11 P.M. to 6 A.M., inclusive; at same time the amount of carbonic acid in the air of the ward was estimated by Pettenkofer's test.

Hygrometrical Observations (in Ward).

11 P.M.—Dry bulb, temperature 58°; wet ditto ditto, 53°; indicating dew point 48·5; elastic force of vapour, 0·342; weight of vapour held in cubic foot of air, 3·8 grains; relative humidity, 71·0.

12 P.M.—Dry bulb, 57°; wet ditto, 52°; indicating weight of vapour contained in cubic foot of air, 3·7 grains; relative humidity, 70·0.

1 A.M.—Dry bulb, 58°; wet ditto, 53°; indicating weight of vapour contained in cubic foot of air, 3·8 grains; relative humidity, 71·0.

2 A.M.—Dry bulb, 58°; wet ditto, 53½°; indicating weight of vapour contained in cubic foot of air, 3·95 grains; relative humidity, 73·5.

3 A.M.—Dry bulb, 58°; wet ditto, 54; indicating weight of vapour contained in cubic foot of air, 4·1 grains; relative humidity, 76.

4 A.M.—Same as last observation; no change in the bulbs.

5 A.M.—Dry bulb, 58½°; wet ditto, 54¼°; indicating relative humidity, 74·75; vapour in cubic foot of air, 4·125 grains.

6 A.M.—Dry bulb, 58°; wet ditto, 54½°; indicating dew point, 51·35; elastic tension of atmosphere, 0·380; weight of vapour in cubic foot of air, 4·25 grains; relative humidity, 78·5.

External Temperature during similar period.

12½ A.M.—Dry bulb, 58°; wet ditto, 48°; indicating dew point, 45·9; elastic force of vapour, 0·309; weight of vapour in cubic foot of air, 3·5 grains; relative humidity, 86.

3½ A.M.—Dry bulb, 52½°; wet ditto, 50½°; weight of vapour in cubic foot of air, 3·95 grains; relative humidity, 92·2.

6½ A.M.—Dry bulb, 51°; wet ditto, 50°; indicating dew point, 49; vapour required to saturate a cubic foot of air, 3·9 grains; elastic tension, 0·348; relative humidity, 93.

Observations drawn from the foregoing.

That there has been an increase in the ward—of 2·85 in the dew point, it having risen from 48·5 at 11 P.M., our first experiment, to 51·35, our last, at 6 A.M.; of ·038 in the elastic tension, having risen from ·342 to ·380; of ·45 in quantity of vapour contained in a cubic foot of air, having risen from 3·8 to 4·25; and of 7·5 in the relative humidity, having risen from 71 to 78·5, so that there was contained in the ward at 11 P.M. 10·71 lbs. of vapour, this quantity being increased to 12·07 lbs. at 6 A.M., so that in this time, viz., seven hours, 22 men exhaled 1·36 lbs. of watery vapour plus the quantity condensed on the windows, &c., in the room. In a corresponding period outside, and in a cubic space equal to that of the ward, viz., 19,267·2 cubic feet, there was 9·95 lbs., and at 6½ A.M., 11·08 lbs., showing a total increase of 1·13 lbs., being ·23 less than the increase in the ward. It was raining during the night.

Estimation of Carbonic Acid in the Ward (windows closed) during same night.

At 11½ P.M., the amount was 0·107 per cent., or 1·07 per thousand volumes; at 2 A.M., the amount was the same; at 6 A.M., it rose to 0·191, or nearly 0·2 per cent., showing a total increase of 0·084 from 11½ P.M. to 6 A.M., when our last observation was tested. The mean of the three observations was 1·35 volumes of carbonic acid in 1,000 of air, showing considerable impurity.

Second Experiment, in Wards 6 and 7, and in one of the Casemate Wards, during the night of November 23, 1860.

The observations of this night are given in the following tables:—

Observations showing Hygrometric Conditions of Wards 6 and 7.

	Temperature at the Dew Point.	Elastic force of Vapour.	Degree of Humidity.	Vapour in a cubic foot of Air.*
Ward 6.				
10 P.M. Dry bulb, 51½°; wet, 48°.	44	0·2935	77	3·35
12 P.M. Dry bulb, 51°; wet, 47¾°..	44·3	0·293	78·5	3·225
1 A.M. Dry bulb, 50°; wet, 47° ..	43·8	0·286	80	3·3
2 A.M. Dry bulb, 50°; wet, 46¾° ..	43·3	0·280	78·5	3·225
3 A.M. Dry bulb, 50°; wet, 46¼°..	42·3	0·270	75·5	3·075
4 A.M. Dry bulb, 51°; wet, 48° ..	44·9	0·299	80	3·4
6 A.M. Dry bulb, 52°; wet, 49½°..	47·45	0·322	83	3·65
Ward 7.				
6 A.M. Dry bulb, 53°; wet, 49¼° ..	47·2	0·325	75	3·7

* The numbers here represent the quantity in grains.

Observations on amount of Carbonic Acid during night of November 23, in Ward 6, &c., in 1,000 volumes of air:— (windows alternately closed and opened).

Ward 6. 10 P.M.	Ward 6. 12 P.M.	Ward 6. 1 A.M.	Ward 6. 2 A.M.	Ward 6. 3 A.M.	Casemate Ward. 3 A.M.	Ward 6. 4 A.M.	Ward 6. 6 A.M.	Ward 7. 6 A.M.
1·358	0·480	1·217	1·427	0·590	1·348	1·119	1·712	0·895

Remarks.—These observations were taken hourly in Ward 6, from 10 P.M. to 6 A.M., inclusive, during the night of November 23; the night was fine; there was a slight fog, which came on towards morning; an observation was also taken in Ward 7, at 6 A.M., and in a casemate ward, at 3 A.M. In Ward 6, there were 21 patients, one gas-light, but no fires burning; the windows were closed in part at 10 P.M., opened until 12 P.M., closed again until 2 A.M., open from 2 A.M. until 3 A.M., then closed until 6, our final observation. They were never opened more than 4 inches, but the effect even of this ventilation on the amount of carbonic acid was very marked, as may be seen on reference to the amounts at 10 and 12 o'clock, and again at 2 and 3 o'clock. In the Casemate Ward, up to 3 A.M., the windows had been closed, one fire was burning; 14 men (orderlies) occupied it. In 7 Ward, at 6 A.M., the windows were closed during the evening; one fire had been burning during part of this time; 15 patients in it.

Series of Hygrometrical Observations on external air during the night of November the 23rd:—

	Temperature at the Dew Point.	Elastic force of Vapour.	Degree of Humidity.	Vapour in a cubic foot of Air.*
10 P.M. Dry bulb, 42°; wet, 41° ..	39·8	0·245	92	2·8
12 P.M. Dry bulb, 38½°; wet, ¾°	36·75	0·2185	95·0	2·6
2 A.M. Dry bulb, 36°; wet, 35½°..	34·75	0·2025	95·5	2·35
4 A.M. Dry bulb, 37°; wet, 36° ..	34·6	0·200	91	2·3
3 A.M. (Pit Ward). Dry, 55°; wet, 51°	47·2	0·325	75	3·7

* The numbers here express the weight in grains.

Observations showing the influence of Ventilation on the Hygrometric Conditions of a Ward:—(No. 7).

	Temperature at Dew Point.	Elastic force of Vapour.	Degree of Humidity.	Vapour in a cubic foot of Air.	Vapour required to saturate a cubic foot of air.
4 P.M. Windows open. Dry bulb, 49°; wet, 46°	42·8	0·276	79·0	3·1	0·9
5½ P.M. Windows closed since 4. Dry bulb, 55°; wet, 50° ..	45·2	0·302	70·0	3·4	1·5
7 P.M. Windows open since 5½. Dry bulb, 45°; wet, 41° ..	36·4	0·214	72·0	2·5	0·9
8½ P.M. Windows closed since 7. Dry bulb, 53’; wet, 49° ..	45·0	0·299	74·0	3·4	1·1
5½ P.M. Outside. Dry bulb, 36°; wet, 35°	33·3	0·193	91·0	2·5	0·3

Remarks.—That the opening of the windows, thereby allowing the external air free entrance, has a considerable influence on its hygrometric conditions, causing its temperature to fall several degrees, its relative degree of humidity to be increased in cases where the atmosphere is highly charged with moisture, as, whilst raining, its elastic tension to become decreased. The weight of vapour in a cubic foot of air was much less after the windows had been opened for some time. Its carbonic acid was always in a large ratio, being more according to the number of men present, as shown by former and subsequent observations. The state of this Ward, viz. 7, was as follows:—17 men occupied it; there were two fires and one gas-light burning during the hours intervening between 4 and 8½ P.M.

XI.

OBSERVATIONS on the amount of CARBONIC ACID and of WATERY VAPOUR in the ATMOSPHERE of some of the WARDS at FORT PITT, with the ordinary Ventilation.

By CHARLES H. Y. GODWIN, M.R.C.S.
and
JOHN WALTERS, M.R.C.S., M.B., Lond.,
Medical Candidates for the Army.

THE normal quantity of carbonic acid in the air may be assumed to be 0·4 volumes in 1,000. The acid has been taken as the standard of impurity on account of the uncertainty of the process for estimating the organic matter; its amount has been ascertained by Pettenkofer's test.

The observations were made during several nights in a front and back ward of each floor of the central building, and also in one of the casemate wards, which resembles the others, and which presents the most unfavourable conditions for good ventilation.

The hours of 3 and 4 A.M. were selected, as at this time the impurity of the atmosphere is probably at its highest point; the ventilation of the Wards was in no case altered, as the object was simply to ascertain the amount of carbonic acid under ordinary circumstances. The means for ventilation are described in the table.

The average amount of carbonic acid present was 0·809 volumes in 1,000.

The greatest amount was found in F Ward (casemate), November 20th, when all the windows were shut, namely, 1·22 volumes in 1,000, or three times the proper quantity, indicating great impurity of the atmosphere.

The smallest amount was found in No. 12 Ward, on November 12th, with an open window and a fire burning in the ward, namely, 0·508 volumes in 1,000, which is very slightly, if at all, in excess of the normal amount.

Day of Month.	Ward.	Total cubical space in feet.	Cubical space, after deductions for furniture, bedding, and persons, in feet.	Number of patients present.	Allowance of cubical space in feet for each person, at the time of the observation.	Means of Ventilation.	Hour.	Length of time patients in bed.	Carbonic acid in 1,000 parts of air.	Dry bulb Thermometer, (Fah.)	Wet bulb Thermometer, (Fah.)	Weight of watery vapour in a cubic foot of air.	Relative humidity.
										Deg.	Deg.		
Nov. 12	2	19,113	18,908·9	19	995·2	9 windows, 5 on one side, 4 on the other; 1 door. Perforated plates in the ceiling, the apertures in the aggregate amounting almost to a square foot. 1 open firegrate, without fire, at each end.	3 A.M.	7 hours	0·694	50	47	3·3	80
„ 13	Ditto	Ditto	18,900·9	21	900	Ditto	Ditto	Ditto	0·849	52	51	4·1	98
„ 13	6	19,113	18,900·9	21	900	Same as in Ward 2; 3 windows being open	4 A.M.	5 hours	0·800	53	51	3·9	86
„ 20	Ditto	Ditto	Ditto	21	Ditto	Windows all closed.	3 A.M.	7 hours	0·864	51	48	3·4	80
„ 17	7	19,113	18,904	20	945·2	Same as in Ward 2; windows all closed.	12½ A.M.	4½ hours	0·824	56	53	4·1	81
„ 17	10	18,110	17,822	20	891	Same as in Ward 2; windows all closed.	3·15 A.M.	7¼ hours	0·838	55	52	3·9	86
„ 18	Ditto	Ditto	17,826	19	938	2 windows open.	Ditto	Ditto	0·570	46	43	2·8	79
„ 12	12	7,222	7,096	5	1,419·	1 fire burning. 2 windows on same side, 1 of which was open. 2 doors. Aperture in wall opposite windows, foot in diameter. 3 perforated plates in ceiling.	3 A.M.	7 hours	0·508	54	50	3·3	74
„ 18	Ditto	Ditto	7,100	4	1,775	Same, only both windows closed. No fire.	3·30 A.M.	7¼ hours	0·726	49	43	2·5	62
„ 18	14	18,110	17,830	18	990·6	Same as Ward 2; 7 windows open.	4 A.M.	8 hours	0·729	48	41	2·8	73
„ 20	Ditto	Ditto	17,822	20	891	All windows open.	3·30 A.M.	7½ hours	0·77[illegible]	48	45	3·0	79
„ 17	1 Casemate	11,770	11,594	16	724·6	Windows at each end, 1 being open. 2 doors opposite. 1 grate, without fire.	3·45 A.M.	7¾ hours	0·928	54	51	3·8	80
„ 20	Ditto	11,770	11,602	14	828·7	Windows all closed.	3·45 A.M.	Ditto	1·221	50	48	3·5	80

XII.

HOSPITAL TRANSPORT:—HOSPITAL STEAMSHIPS, "MAURITIUS" AND "MELBOURNE," EQUIPPED FOR SERVICE IN CHINA.

THE following is a brief description of the general arrangement for the accommodation of the sick provided in each ship:—

The "Mauritius."

In this ship are three decks: the spar-deck, upper troop-deck, and lower troop-deck. The upper troop-deck is chiefly appropriated to the various offices necessary to an hospital-transport, and the lower troop-deck is fitted for the reception of sick and wounded. The butchery and privies are on the spar-deck, but the ablution-rooms, wash-house, drying-room, and bakehouse, are on the main or upper troop-deck. On the port side of the upper troop or main-deck eight single berths are fixed, and the lower troop-deck is divided into three water-tight compartments, in which the berths are arranged as follows:—

Along the sides of the fore compartment ten berths are arranged in a single tier, five being placed on each side; in the centre of this compartment are forty berths, arranged in pairs, and placed in tiers of two, one over the other, the upper one to be occupied by slight cases only; and, in addition, four cots are fixed between the iron stancheons of this part of the vessel. The space for each person amounts to 320 cubic feet. All the berths are 6 feet 3 inches by 2 feet 6 inches, the single ones being 2 feet 3 inches from the deck below. The berths in tiers are 3 feet apart, the lower ones being 1 foot from the deck below, and the upper ones 4 feet from the deck above.

The middle compartment has the engine-room, &c., in its centre, boxed off. In it seventy-two berths are arranged in two tiers, one above the other, in the same manner as those in the middle ranges of the fore compartment. Arm-stands are placed around the boarded partition which incloses the engine-room.

In the after compartment are seventy-four berths, arranged in the same manner as those in the fore compartment, making a total of 204 fixed berths and eight cots.

There is room, in addition, for hammock accommodation for the attendants. The space for each person amounts to 223 cubic feet. A few short ladders have also been placed on board to enable the men to get into the upper berths. In the after compartment is a space divided off for a baggage-room; the mess-tables, forms, &c., are placed chiefly on the main-deck, but there are a few in convenient situations below. The pack-store and issuing-room are placed under the fore compartment. An examination of the accompanying sketches, detailed fittings, &c.,* will explain more fully the different arrangements on board this vessel. The sick will be dieted on the usual scale of military hospitals, by an officer of the Purveyor's Department stationed on board.

Ventilation and Warming.—The deck is ventilated by means of hatchways, ports, tubes, Dank's ventilators, and two tubes connected with the galley fire. Heat in the centre compartment is obtained from the engine-room, and in the two other compartments from swinging and cabin stoves.

The supply of water is provided in a similar manner to that for the steam-ship "Melbourne." (*see* page 340).

The surgery in this vessel is similar to that of the "Melbourne."

Arrangement of Offices.

On Spar Deck:—

1. The Privies, eight in number, are placed four on each side of this deck, before the beam, and are of the following dimensions:—Fore and aft, 4 feet 2 inches; athwart, 4 feet 6 inches; height, 6 feet. There are two seats in each, separated by a partition. There is a urinal in front of the privies, on the port side, and abaft there is a shaft through which night-stools, &c., can be emptied.

2. Butcher's house.—Dimensions: fore and aft, 7 feet; athwart, 7 feet; height, 6 feet; fitted with meat-hooks, &c.

On the Upper Troop or Main Deck:—

3. Ablution-room.—Dimensions: fore and aft, 12 feet; athwart, 7 feet 6 inches; height, 8 feet; fitted up with hooks, two baths, basins, &c.

4. Wash-house.—Dimensions: fore and aft, 10 feet; athwart, 7 feet 6 inches; height, 8 feet; fitted with a large trough, lined with lead.

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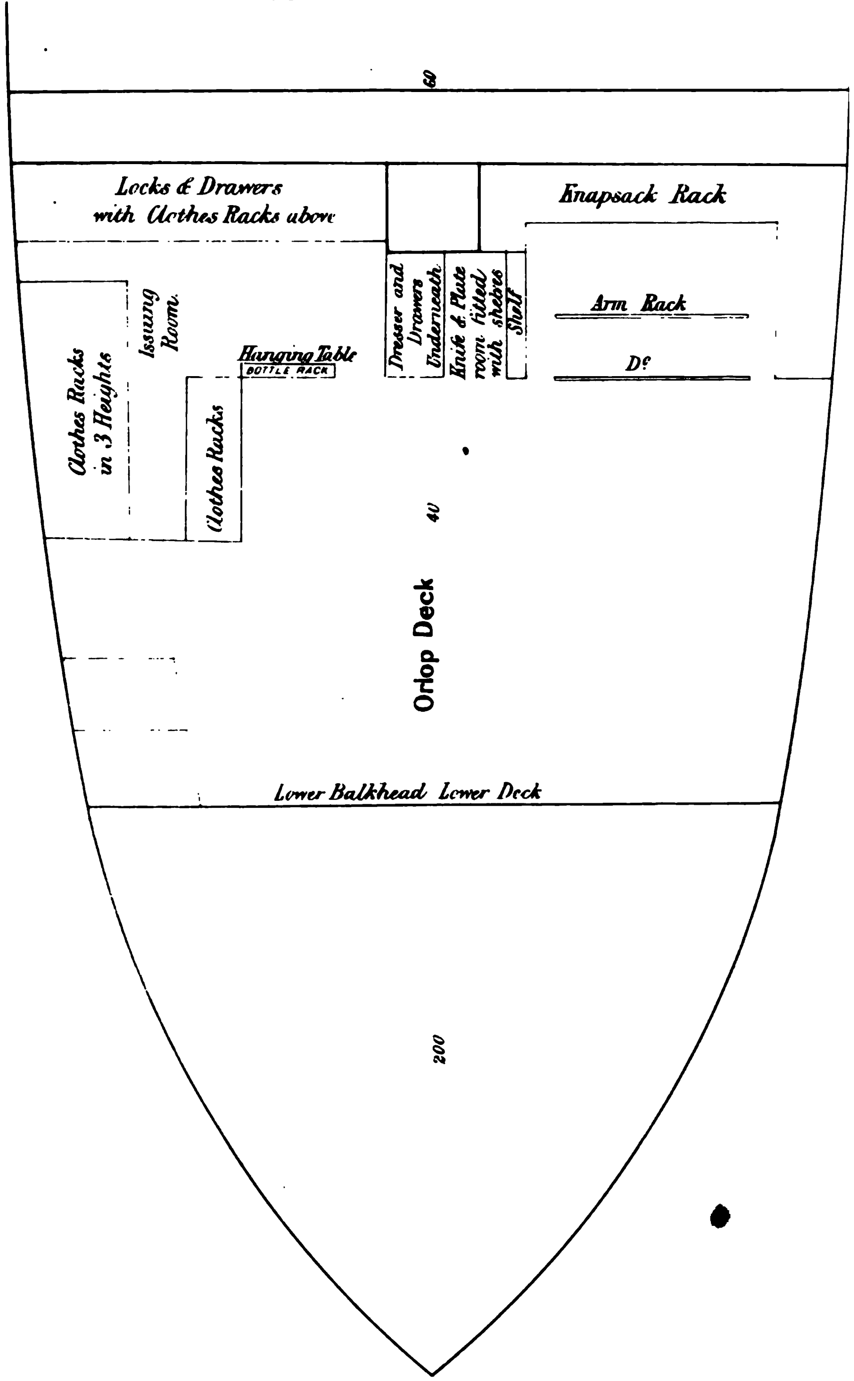
* Appendix, No.

S.S. MELBOURNE.

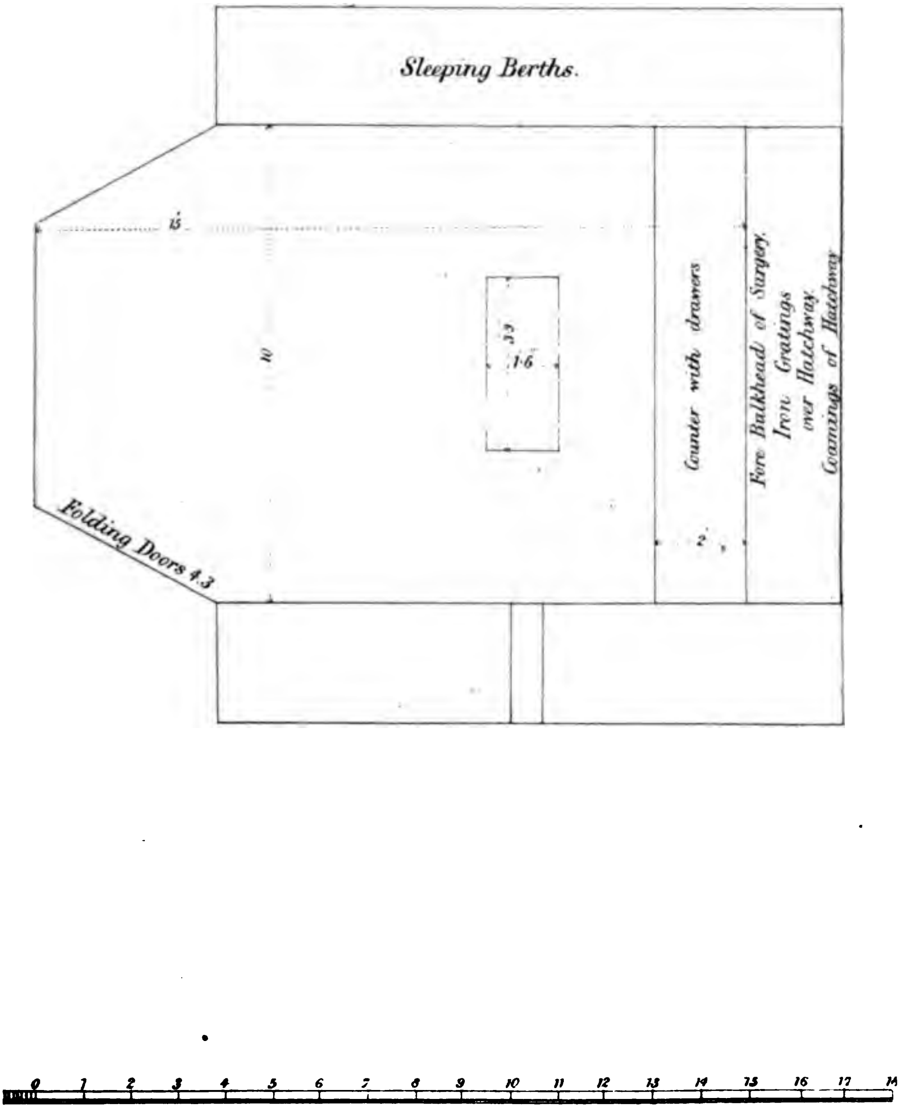
Section of Lower Deck.



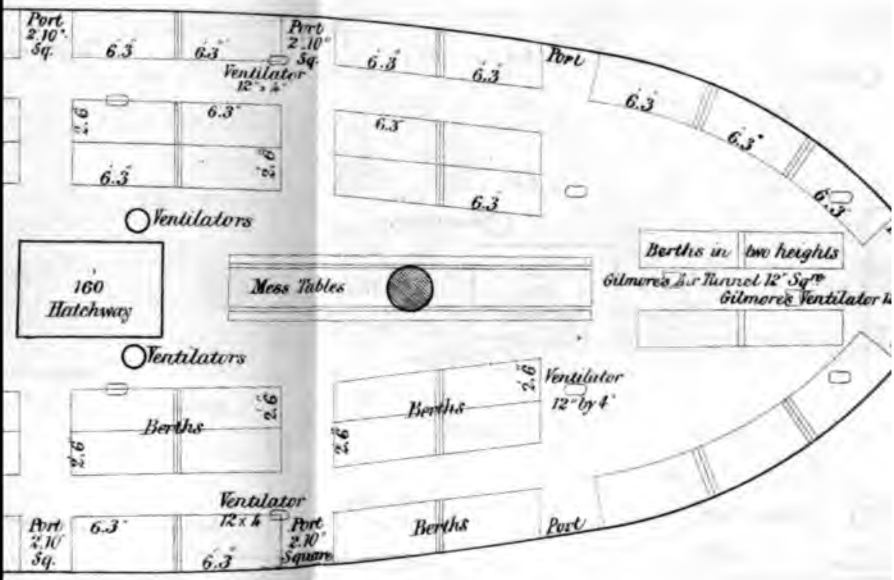
Day & Son Lithrs

S. S. MELBOURNE.

Surgery.



Day & Son, Lith^rs to the Queen


Port 2.10" Sq.
6.3
6.3
Port 2.10" Sq.
Ventilator 12" x 4"
6.3
6.3
Port
6.3
6.3
6.3
2.6
6.3
6.3
2.6
6.3
6.3
Ventilators
160 Hatchway
Mess Tables
Berths in two heights
Gilmore's Air Funnel 12" Sqre
Gilmore's Ventilator 12
Ventilators
Berths
2.6
2.6
Berths
2.6
2.6
Ventilator 12" by 4"
Ventilator 12 x 4
Port 2.10 Sq.
6.3
6.3
Port 2.10" Square
Berths
Port

Day & Son, Lith

5. Bakehouse.—Dimensions: fore and aft, 10 feet; athwart, 7 feet 6 inches; height, 8 feet; fitted with shelves and baking-boards.

6. Drying-room, lined with metal.—Dimensions: fore and aft, 10 feet; athwart, 7 feet 6 inches; height, 8 feet.

The "Melbourne."

Accommodation.—On the lower deck of this ship—which is 208 feet in length, and 35½ feet in breadth, the height between decks being 6 feet 4 inches—are placed 120 fixed berths, and six cots for the accommodation of sick men; also twenty sleeping berths, and hammocks for the orderlies.

The berths are arranged fore and aft, in single tiers, at a distance of two feet from the deck below, and four feet from that above, the ends of the berths being separated from each other by an interval of six inches. There are three ranges of these berths on each side of the ship; one a single row, running round close to the sides of the vessel, the others, along the middle of the ship, each being a double row of berths, placed side by side, with a partition-board fifteen inches high between each pair. A passage three feet in breadth, separates the row of berths round the sides of the vessel from the adjacent central range; between the latter and the corresponding range of the opposite side is an interval of ten feet, affording space for mess-tables, forms, &c., which are so constructed as either to be fixed up against the beams or removed altogether, as occasion may require.

In the centre of the ship, aft, between the iron stanchions, are spaces for six cots, adapted for the reception of very bad cases.

Each berth is 6 feet 3 inches long, 2 feet 6 inches wide, and is fitted with a moveable galvanized metal bottom; and the following articles are placed on board, to be used at the discretion of the Principal Medical Officer:—

Hair and flock mattrasses,
Hair and feather pillows,
Hair bolsters,
Counterpanes,
Blankets,
Sheets,
Swinging trays,
Ropes and handles for the sick to raise themselves by,
Ring for holding a chamber utensil,
Crockery pint mugs, basins, knives, forks, and spoons,

and every requisite of diet provided by a Purveyor's Clerk stationed on board.

Ventilation.—This is obtained by means of hatchways, ventilating shafts, ports, and two of Danks' patent ventilators. The whole deck is open to thorough ventilation, as the short partition aft is freely perforated by ¾-inch openings in zinc frames above, at the centre, and at the lower part.

The deck is heated by means of three swinging and two cabin stoves.

Supply of fresh water is kept up by a steam condenser, making upwards of 1,000 gallons daily. There are no fixed water-closets between decks, but Fyffe's inodorous closets in sufficient numbers (four on each side) are placed on board.

Surgery.

The Surgery, which is 15 feet by 10 feet, is furnished with every requisite for dispensing; it is ventilated by openings in a zinc frame in the upper part of a bulk-head. In the centre is placed an operating table, above which is a skylight sufficiently large to admit of a man requiring operation being lowered into the surgery from the deck.

NEW RAILWAY HOSPITAL-CARRIAGE.

IN a paper on the hospital arrangements at the Camp of Chalons, published in the *Récueil de Mémoires de Médécine Militaire,* for 1859, M. Jules Périer, Médécin-en-chef, gives the following description of an hospital carriage, fitted up for the conveyance of the sick by the railway from the Camp to Chalons, in the hospital of which town the more serious cases occurring in the force were treated:—

"As I considered it necessary that the sick should be completely separated from the other passengers, the Intendant agreed that a special carriage should be provided for their accommodation. But, however well adapted a third-class carriage might be for those who were able to sit, it was not at all suited for the conveyance of sick in the recumbent posture. I therefore expressed my wish that a hospital carriage should be provided; and it appeared to me that a baggage waggon could without difficulty be fitted up for the accommodation of patients, either sitting or lying down, as the nature of their cases might require, and in which they might be attended to, and if need be receive medical aid. The Intendant, having considered my proposal, and having at the railway station satisfied himself of its practicability, drew up, for the approval of the Minister of War, the terms of agreement by which the company were to place such a carriage at the disposal of the military administration. I may here remark, that the average number of sick for whom transport from the Camp to Chalons would be required out of a force from 12,000 to 15,000 men, could not be much less than 10 daily; the company, therefore, could be guaranteed the minimum rate of remuneration for the conveyance of 10 persons, during the period extending from the 1st of July to the breaking up of the Camp. In order that the proposals submitted on this subject for the approval of the

Minister of War, should be complete, M. Topéin, the Accountant of the Military Hospital, and I, took the necessary steps to prepare the carriage for the purpose for which it had been selected. The arrangements which we proposed having been carried out, I shall now describe the hospital carriage in which our sick were conveyed from the 1st of July to the 20th of October last. The interior of an ordinary baggage waggon is 17 feet in length by 7½ in breadth; it opens on each side by two sliding doors, 3 feet 4 inches in breadth; in front of the waggon is placed the breaksman's seat, and the stage which supports this raised seat encroaches to the extent of 4 feet 9 inches on the length of the interior; the sides of it, however, can be made available for the accommodation of two sick lying, and likewise provide seats for one or two attendants. In the space remaining unoccupied, 12 feet 3 inches in length, five moveable benches were arranged transversely, the back of the bench furthest from the doors resting against the posterior wall of the carriage, the others were placed in the same manner in front of it, so as to leave room between them for the sick to sit down; all of them were furnished with backs, and each held five persons. In four of the benches, and on the same side, the backs were four-fifths of the length of the seats, so as to admit of the attendants stepping over them and having access to all the rows. Each bench being moveable, its place could be occupied by a litter, and when one only was required, room was found for it without either overcrowding or removing any of the benches, but simply by reducing the space between each. These arrangements afforded room for 25 sick sitting and 2 lying on mattrasses, placed on each side of the stage of the breaksman's seat already mentioned.

Bed Litters.—The ordinary litters of the hospital could not have been made use of without encumbering the carriage, the width of which, as I have already stated, is 7½ feet, which is less than the entire length of the ordinary litters; six bed litters, therefore, with moveable sides, were constructed according to our directions. Of these, two for each division were kept in the field hospitals of the camp, and were at all times available for the conveyance of the sick of the different corps who were not in a fit state to be placed in an ambulance waggon. On field days one of them was always placed behind each of the hospital store waggons which followed the movements of the force. Thus, either in camp, beside the tents, or at the field hospital, or on the ground where the evolutions were taking place, a patient might be placed on the bed-litter, from which he would not require to be again removed until his arrival in the wards of the hospital at Chalons. They were surrounded with a curtain, for the shelter of the sick, spread over four rods, corresponding in size to the sides and ends of the litter, and supported by four upright bars, one having a hinge by which the frame could be lowered. This plan, contrived by the Intendant at Boujeiah enabled the litter to be uncovered to such an extent as might be required for placing or removing the sick, or affording them assistance. The bed letters have been of real service to us, not only on account of the ease with which they can be placed and arranged in the hospital carriage, but as sustitutes for beds, their excellent construction allowing them to be used as such for patients whom it would be unsafe to move. We would here remark that no conveyance, for either sick or wounded, can for safety or convenience, in our opinion, equal the litter. To appreciate those cases in which its employment is indispensable, and to see that it is provided for the conveyance of such, are important points in the duty of a regimental surgeon, who ought never to dispense with its use simply on account of the number of bearers it requires. By closing more or less, according to the direction of the wind and temperature of the air, the closely fitting sliding doors of the carriage, the necessary amount of ventilation was obtained; and for the protection of the sick from accidents, wooden bars were placed breast-high across the doors, either of which, and sometimes both, remained open during the journey."

XIII.

ARMY MEDICAL SCHOOL.

The School intended for the special training of Physicians and Surgeons, about to enter the Medical Service of the Army, as recommended in the Report of the Royal Commissioners for inquiring into the Sanitary Condition of the Army, has been established at Fort Pitt, Chatham.

Three Professors have at present been appointed, viz.:—

Thomas Longmore, Esq., *Deputy Inspector-General of Hospitals, Professor of Surgery.*

E. F. Parkes, M.D., *Professor of Hygiène.*

William Aitken, M.D., *Professor of Pathology.*

The School was opened on the 2nd October, when forty-three gentlemen, intended for the Royal and Indian Armies, and who had been selected from other competitors at the examination held in London in July and August, attended. The Right Honourable the Secretary of State for War, Mr. Sidney Herbert, and Dr. Gibson, C.B., Director-General of the Army Medical Department, were present. Major-General Eyre, commanding at Chatham, and various Military and Medical Officers, also attended the opening lecture, which was delivered by Professor Longmore.

After the lecture, some observations were made by Mr. Herbert, Major-General Eyre, and the Director-General.

A second lecture was delivered by Mr. Longmore, on the 9th of October, which was also attended by General Eyre, at the request of this Officer, as well as of the rest of the audience, it is now published, as it gives an extremely good sketch of the Regulations which affect the Medical Officers of the Army, and on the relations between the Medical and the other Departments of the Army.

INTRODUCTORY ADDRESS DELIVERED AT FORT PITT, CHATHAM,

ON THE

OPENING OF THE ARMY MEDICAL PRACTICAL SCHOOL.

By Deputy Inspector-General T. LONGMORE, *Professor of Military Surgery.—October* 2, 1860.

GENTLEMEN,—In commencing any undertaking,—whether a scientific investigation, a course of study, or some physical operation,—it is the part of a prudent man to take a general survey of the ground he has to pass over, to form calmly a definite estimate of the purpose he has in view, and carefully to weigh the means at his disposal for insuring success in the attainment of his object. Acting on this principle, it is the custom of each professor, in the civil schools, to employ his opening lecture in unfolding, before his class, a map, as it were, of the province on which he is to treat, pointing out its leading characteristics, and tracing the outlines of the several sections which compose it, and which have subsequently to be travelled over and studied in detail. But on this occasion something more is required. We are not commencing a sessional course of study, but are inaugurating a new and very important work,—the establishment of a fresh element in army medical education in England; and it behoves us, therefore, to take a wider range, and to consider, as far as time will allow, the succession of events which have led to the formation of this school, its plan, and the benefits which it may be expected, we, who are members of the Medical Department, as well as the State at large, are likely to derive from its influence. At a recent meeting of the Senate of the Army Medical School, it was ordered that the professor on whose lecture day, as set apart in the syllabus of the course of study, the opening of the school happened to fall, should give an address on these subjects, and it has fallen to my lot to do so. I, therefore, now meet you for the purpose of obeying the directions of the Senate to the best of my ability.

In the year 1794, when John Hunter published the essay on *Gun-shot Wounds* in connexion with his celebrated work on the blood and inflammation, he wrote—so low was the character of military surgery in his estimation, himself not without experience as a military surgeon,*—that "it was hardly necessary for a man to be a surgeon to practise in the army." Even so late as that period (1794), the medical officers, on entering the service, occupying the same position, and available for the same duties, as those now performed by assistant-surgeons, had not even the honour of holding a Royal Commission, but were only warrant officers; while the higher grades of the department were, for the most part, filled by surgeons and physicians who had never served in the junior ranks. The advantage of the stimulus, which a prospect of promotion according to definite regulation affords, was thereby lost; and the very inferior position in the social status, the low rates of the regular remuneration, and of compensation in case of disability from disease or wounds contracted on service, were little likely to act as incentives to the well-informed or industrious to enter the ranks of the army, or, at least, to remain in them. Still, low as the situation was of those who held the medical charge of troops by comparison with what it is now, it was greatly superior to what it had been in previous reigns. In Queen Elizabeth's, for example, one of the most conspicuous periods of English history, the army surgeons, as Dr. Hennen has noticed, were classed with serjeants, fifers, and drummers, had the same pay, and were placed in other respects on a similar footing in the public service. In trying to explain this anomalous position of men, who in the earlier ages of society appear to have been regarded with the highest esteem, almost with veneration, and who were really representing a science requiring many attributes of very high order, and of vital importance to all ranks of society, especially those engaged in war, we are led to infer that the military surgeons of the Elizabethan era were as inferior in their attainments and usefulness as their position was degraded. The general laws of health were wholly unknown, and the particular departments of medicine and surgery were destitute of all those valuable attributes which they have acquired in our time from a more intimate acquaintance with anatomy, physiology, and the allied sciences. So little regard was paid to the physician's art at the period to which I have just referred, owing, beyond doubt, to the ignorant and superstitious practices on which it chiefly depended, that one of the greatest cultivators of natural science who ever lived, Lord Bacon, thought right to observe:—"Physicians are of little use to temperate persons. A man's own observation on what he finds does him good, and what hurts him, is the best physic to preserve health." The preservation of health, whether as applied to individuals, or, especially, to communities of men, is now acknowledged to be by no means a matter of such common and ready attainment, but a science requiring deep and special study; a science demanding acquaintance, not only with all the varied functions of the human frame, but also necessitating a knowledge of the physical laws which influence those external operations of nature with which our existence is so inseparably associated.

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* The celebrated John Hunter served as a surgeon on the staff of the army in the expedition to Bellisle in 1760, and in the same capacity in Portugal in 1763. In 1786 he was made Deputy Surgeon-General, and, in 1791, Surgeon-General of the Medical Department of the British Army,—a laborious office, corresponding with that of the Director-General under existing arrangements. He held this office during the early part of the war with France which preceded the peace of Amiens. After Hunter's death the direction ceased to be vested in an individual, and, instead, an Army Medical Board was constituted, consisting of a Physician-General, Surgeon-General, and Inspector-General of Hospitals.

As general knowledge increased, and the medical art itself became more worthy of the name of a science, the importance of obtaining well-educated surgeons for the army was gradually, *pari passu*, appreciated. Men prominent for their abilities were sought for to fill the higher appointments. The qualifications of the regimental surgeons were more inquired into, and their position was in proportion improved. I have already mentioned that, at the beginning of this century, assistants, on first joining "Hospital Mates," as they were then called, were warrant officers. In the year 1813 this arrangement ceased, and the assistant-surgeons were commissioned by the King. In the year 1830, and again in 1840, increased remuneration, and other advantages, were conceded to the medical officers, and but little change subsequently occurred up to the period of the late war with Russia.

At the time of that war, the surgeons of the British army, in regard to their pay and social status were, in most respects, as advantageously placed as the surgeons of the foreign armies with whom they were brought into contact; but in respect to the opportunities afforded for obtaining special knowledge in the military medical and surgical art and duties, the latter had long possessed exclusive advantages. Such were the schools of instruction which had been established by the Continental Sovereigns and Governments for the improvement of their military surgeons, and the collections of regular reports and observations from the army hospitals, which, in France, were commenced nearly a century ago. And these superior opportunities of improvement were not confined to purely medical and surgical matters. I may mention as a special instance of the educational advantages enjoyed by our Continental brethren, that, while no means of preliminary study on the subject of hygiène existed for the British surgeon at that time, full instruction, on every question of sanitary import, both scientific and practical, was afforded at the Val de Grâce to the French medical officers before they commenced their military duties.

The war with Russia was fated to lead to important changes in these and many other circumstances of British medical officers. The army had scarcely been collected in Turkey, or the subsequent operations in the Crimea commenced, before attention was specially attracted to their qualifications, duties, and influence. I need hardly remind any one present of the disease which caused such severe losses among the troops in Bulgaria, nor of the deficiency in surgical appliances, and means of transporting our wounded, which became manifest after the battle of the Alma, nor of the great mortality during the siege operations in the winter of 1854–55. The Commissions which were ordered, one after the other, in consequence of these events, terminating with the Royal Commission, which inquired generally into the regulations affecting the sanitary condition of the army, and the organisation of military hospitals, must be remembered by all. The work accomplished by means of those inquiries, it is believed, will produce good far outweighing the original suffering which led to them, great as it was; for that suffering was temporary and limited, while the good results will be unlimited in duration, and will prevent, it is hoped, the possibility of a recurrence of the circumstances which caused it. Great benefit was conferred by the investigations of these several Commissions on the officers of the Medical Department. When the amount of sickness and loss of life were first realised by the nation, the surgeons had to sustain no little amount of obloquy, and, for a time, the Army Medical Department was placed, as it were, on its trial. The several Commissions, however, brought in a verdict of acquittal in favour of the great body of British surgeons; and elucidated the fact that what were supposed to have been faults in administration, had, in the main, arisen from limited resources, and from extrinsic influences over which the medical officers had no control. The whole department was proved to be in a very dependent position compared with the engineer and other scientific branches of the army.

Although the right performance of the departmental duties was held to be of the greatest importance, there was no responsibility in its officers. For there can only be responsibility where there is also power; where dependence can be placed on fixed results following fixed lines of conduct. Great evil was found to be the consequence of this state of affairs. The army was deprived of the advantages which would have constantly, in the daily routine of business, sprung from the energy and higher character which a more responsible status would have impressed on its medical officers; and, moreover, such a habit of passive helplessness was engendered, that, when a sudden demand for immense efforts arose, as in the outbreak of a great war, there was no power of elasticity equal to the occasion, the whole system was cramped and half paralyzed, while it was evident that any sudden breaking asunder of the bonds by which it had been so long tied could only lead to still more inconsistent action, and still greater confusion.

The labours of the Royal Commission before mentioned, terminated in developing a scheme for putting a stop to all these evils, by a complete re-organization of the Army Medical Department. Its plan of administration; its relations to other Departments; the rules affecting its interior economy; the mode of admission of new members into its ranks, and their preparation for its duties, were re-modelled.

It is with the last of these that we have now to do, for the establishment of the Army Medical School is part of the plan for a more efficient preparation of the army surgeon; a plan by which an opportunity is to be afforded to each novitiate of laying a foundation of the specialities of military medical knowledge, on which will afterwards be raised, it is to be hoped, an extended superstructure of practical usefulness. The want of an institution of this nature had long been under the notice of the Government authorities. There were before them, in the first place, the examples on the Continent, where a necessity for keeping large standing armies existed, and where, therefore, it was most probable, in the usual order of things, that the best mode of perfecting those armies in their various parts, would be adopted. In France, even so early as 1747, schools of military surgery and medicine had been established at the army hospitals in those cities where large garrisons were usually collected. No military medical school was established at Paris until a later date; but it must be remembered that all the chief scientific establishments connected with the French army were, at the period referred to, at Metz, Strasbourg, Toulon, Lisle, and other garrison towns, and that it was not until a more recent date that the extensive fortifications which now exist at Paris were constructed, or that a large garrison of regular troops could be accommodated within its precincts. The attention of the English Government was first seriously attracted to this subject, however, by an earnest appeal of the distinguished surgeon and teacher, Mr. John Bell, in 1798; written on the occasion of his going from Edinburgh to Yarmouth to watch the treatment of the wounded sailors after the battle of Camperdown. A great portion of the memoir, which Mr. Bell addressed to the First Lord of the Admiralty at that time, may be found in the late Sir G. Ballingall's published lectures. In this document, which is written in very forcible language, Mr. Bell called attention to the defective condition of the naval surgical service; proposed, to use his own words, the establishment of "one great school of military surgery," and enumerated a list of the topics which should be there studied by the naval and army surgeons. This letter appears to have had influence in the subsequent formation of the Military Surgery Chair at Edinburgh, which was first occupied by Dr. Thomson, author of the "Observations on the Military Hospitals of Belgium, after the Battle of Waterloo." It was in 1806 that Dr. Thomson was appointed Professor of Military Surgery, but he had previously given a short course of lectures on military surgery, in 1804, at a time when there was great military excitement throughout the nation, arising out of the renewal of hostilities with France, and a prevailing apprehension of invasion. This was the period, too, when Dr. Robert Jackson, in his celebrated treatise on the "Medical Department of Armies," advocated the establishment of an "Army Medical Practical School," in connexion with the Invalid Depôt, which then existed in the Isle of Wight. This book was published in 1805, and in it Dr. Jackson unfolded a system of education for army surgeons,—including a general examination previous to their admission as candidates; a course of subsequent study in army specialities, and examination in these specialities before being commissioned; a further test before promotion; and other details, which you will find, on reference, almost precisely correspond with the rules laid down in the recent orders on these subjects. Dr. Thomson resigned his appointment of Professor of Military Surgery at Edinburgh, in 1822, and in the course of the following year it was conferred by the Crown upon Sir G. Ballingall, whose work entitled "Outlines of Military Surgery," has been for some years the chief, and almost the only general work on this subject for British army surgeons. In the year 1846, Mr. Tufnell began a similar course of lectures in Ireland; and about the time of the commencement of the late war with Russia, at the instigation of Sir De Lacy Evans and other general officers, Government proposed, and the House of Commons voted, an annual sum for the endowment of this chair at Dublin, and for the establishment of another in London. The latter appointment was not filled up, and the defective sanitary and surgical arrangements in the early part of the Crimean war, so concentrated attention on the Medical Department, as before observed, and led to inquiries on such an enlarged scale, that the question of the establishment, or otherwise, of an individual chair, became comparatively insignificant. The subject of army medical education was investigated in its widest extent by the Royal Commissioners, and one result of their deliberations was the recommendation to Her Majesty,—"That, after the first examination, candidates be sent to a military general hospital, there to go through a course of military hygiène, and in clinical military medicine and surgery, for which purpose the necessary professorial chairs, in lieu of the two now existing in Edinburgh and Dublin, should be instituted at the principal general hospital in England." In arriving at this conclusion, the Royal Commissioners were guided by evidence collected from many various directions, and after full examination of the systems in use in the continental military establishments. There was one, however, whose opinion, derived from large experience and remarkable sagacity in observation, exerted an especial influence in originating and establishing this school. I should hardly have presumed to refer to Miss Nightingale by name, so unostentatiously was her influence in this matter exerted, had not one of the Royal Commissioners, prominent from his high position, and by all he has done to diffuse sanitary knowledge, recently made public mention of this fact.

Some brief extracts from the lucid report of the Royal Commissioners (who were presided over by one long conspicuous for his devotion to sanitary science, and who has nowhere displayed more thorough acquaintance with the subject than in this report, Mr. Sidney Herbert,) will best show the more prominent reasons which led to this recommendation. After illustrating the extreme importance of maintaining the efficiency of armies and fleets, not so much by aiming at the cure of disease, as at its prevention, the

Royal Commisioners state:—"The medical officer should, therefore, not only be thoroughly conversant with sanitary science, but with the mode of its application to the preservation of health under every possible variety of circumstance and character. Unless he have the benefit of the experience of others, his knowledge may come too late, and may itself have been acquired at the expense of those whose lives have been intrusted to his charge. It is in a military hospital alone that the probationer can acquire the knowledge which is indispensable to the proper exercise of his profession in the army." Again,—"For the purpose of teaching military hygiène, and that branch of medicine which comprises the treatment of tropical diseases, it is stated that those chronic cases returned from abroad will be more useful than acute cases of ordinary disease contracted in England could be, inasmuch as they show results of tropical diseases which the clinical lecturer would trace back to their causes, and, by describing their original features, enable the student to recognize and deal with them whenever he might meet with them in his subsequent practice." I believe that this reasoning applies with equal force to surgical cases, although they are not referred to in this part of the report; for it is a constant source of regret among military surgeons in the field, that they have not the opportunity of seeing the results of their treatment. It cannot teach dexterity in operating to see the remnant of a limb after amputation, but valuable information may be gained by comparing the condition of a man in whom a limb has been amputated, with another in whom for a corresponding injury, conservative surgery has been practised. It has been in a great measure from subsequent observation of the condition of soldiers whose limbs had been saved after gunshot wounds of the foot, leg, and thigh in the Crimea, that the French surgeons, during the late Italian campaign, abandoned as a general rule the practice of conservation in those regions (injuries near the hip-joint alone excepted), and adopted primary amputation, not only as involving less risk of life in the first instance, but as a less painful evil in its consequences. I may also refer to a question of great practical importance which is at the present moment dividing opinion among military surgeons in France, respecting some of the effects of inflammation after gunshot injuries to bones, and the necessity for substituting disarticulation for amputation in such cases when consecutive operations are required; a question which has arisen from observations on the invalids from the Italian war, who have lately fallen under the supervision of M. Jules Roux, at Toulon. On these, and many other subjects concerning military surgery, differences of opinion still exist, and points of practice have yet to be settled; and one chief advantage of an opportunity for devoting a certain period to specialities of army practice, arises from the fact that, in many instances, the rule of treatment which guides surgeons under the circumstances of civil life, is rendered inapplicable by those of military life. To give an estimate of the field of observation open at the Central Invalid Depôt of the British Army, it may be mentioned that the number of soldiers who arrived and were disposed of at Chatham during the two years of the Crimean period, 1855 and 1856, amounted to 14,700, and that the average number for the eighteen years from 1839 to 1856, was considerably above 3,000 per annum.

But it is not only in this way that the site of the headquarters of the Medical Staff offers to medical officers on commencing their career, special facilities for acquiring knowledge in the duties which will afterwards devolve upon them. The opportunity of obtaining a large fund of valuable information is presented by its pathological museum, numbering some thousands of specimens, collected by the medical officers of the army in all parts of the world, and illustrating the diseases of all the climates, and injuries under all the circumstances to which soldiers are particularly exposed. There is a very large and complete library available for purposes of reference and study. The model museum, which was formed at Dublin by the energetic exertions of Professor Tufnell, has been transferred to Chatham, and when this has been sufficiently extended so as to completely illustrate the various modes of conveying sick and wounded soldiers adopted by different armies, and in different countries, according to peculiarities of climate or surface; all the various articles of camp and hospital equipment; the panniers, carts, and waggons for their conveyance; fittings on transport and hospital ships, and many other articles of a like nature, there will be a power of educating through the eye, which cannot fail to be followed by much practical benefit.

Of course there have not been wanting objections against this institution, as there must be to every change; but I think they have been urged, for the most part, by those who have not fully considered either its objects or its advantages. Students have been told that after passing the usual examinations they must submit to be sent back again to school, if they wish to obtain appointments in the army. But it is not right to say "*back again*:" it should be "*forward*," if regard is paid to the future pursuits of the person most interested. And are we not all our lives scholars? Is not the professional press unceasingly pouring forth valuable information derived from the labours of scientific explorers, and tending to enrich medical knowledge with fresh acquirements for the benefit of humanity? Is there not a continuous increase in the number of appliances for mitigating human suffering, with which, if we mean to meet our obligations as professional men, we are bound to become acquainted? It is true that before joining the Army Medical School, gentlemen will have reached a position entitling them to take their places as practitioners in civil life; but, even in civil life, no one would be building his hopes of future success on very sure foundation, if he acted upon the conclusion, that, in attaining that position, the time was come for him to abandon study. But, in military practice, the case is altogether different; the knowledge has really not been acquired which is necessary to fit the probationer for it. His studies have all tended towards the prime object of the great bulk of British practitioners—the *cure* of diseases or accidents; and the diseases and accidents which he has chiefly considered are naturally those which belong to civil life and an European climate. But the cure of disease, though an important part of the complex duties of an army surgeon, is by no means the chief duty; and this will be readily understood on recollecting that he is usually placed in medical charge of a body of men in the prime of life and sound constitution, and that he best performs his functions, in the eyes of the State, who has the least disease to treat, who keeps his men in the most efficient state of health, ready for any duty which the many circumstances of military life may demand. Hence a train of reasoning, and habits of thought, arise, unlike those which chiefly prevail among civil practitioners. Hence, also, the necessity of special study of hygiène in its application to military life, for the circumstances of bodies of troops involve far more urgent considerations than those which require attention when the preservation of the health of individuals is studied, or of persons associated in domestic life, as in civil society. As the works of our chief naval and military writers on preserving the health of fleets and armies become studied, the military practitioners will learn how much attention has been paid to this subject, and, in many instances, with what successful results, long before officers of health, distinct from medical practitioners, were thought of in civil communities, and will perceive of what essential importance a particular knowledge of hygiène must be to train them for undertaking the medical charge of troops. But, in addition, what was never the case before, the sanitary duty is now a defined special office of army medical officers; and the execution of the duties of this office, while, on the one hand, made compulsory, is, on the other, supported by a weight of authority such as never before existed. Again, medical officers may expect that a considerable part of their lives will be passed in climates where diseases of very different types will be presented to them from those usually met with in England; or, if of the same type, greatly modified in their character. The habits and circumstances, too, of soldiers, whether at home or in colonies, on board ship, in cantonments, or in the field, lead to other subjects of interest concerning disease and its treatment. Hence arises the necessity for special study of tropical and other diseases to which British soldiers are liable. Then in battles, not only do whole classes of injuries occur in great numbers, which are rarely seen in civil hospitals, especially in England, where, for two centuries, we have been so favoured in the absence of wars and civil strife, but also peculiarities of treatment owing to the peculiar circumstances in which troops are placed, when engaged in military operations, have to be studied. The fitness of recruits for military service, having in view the particular duties and exercise they will have to perform, as well as the disabilities which unfit men for further service in those duties, require close attention; for, in practice, these subjects often present difficulties such as would not be anticipated by persons unconnected with military transactions.

These, and many other subjects connected with the army medical service, require preliminary study, and will repay the time and trouble in their acquisition by the saving of greater trouble and longer time in the future. So far from this "secondary schooling," as it has been called, being objectionable to the younger members of the Army Medical Department, I believe its advantages will be so manifest, that the opportunity of obtaining an insight into the specialities I have indicated will be highly prized, as, I am sure, the knowledge gained will be of practical benefit afterwards.

A change in the plan of teaching these, the more prominent subjects of study, which I have enumerated, has been thought necessary, and to this change I will briefly refer. The range of sanitary science has now become so extensive, the diseases peculiar to certain climates have been so much more investigated of late years, their pathology ascertained with so much more precision, the specialities of military surgery, properly so called, have been so much more considered, especially in connexion with the recent important improvements in fire-arms, the subjects themselves are so distinct in their nature, that it would be inconvenient to persevere in classing them together in one set of lectures, as hitherto has been done. In attempting to do so the attention to each speciality could scarcely, in the allotted time of a course, be given with sufficient closeness; and, if limited to a consideration of general principles, the course of study would only be leading back to subjects which can be more perfectly taught in civil schools, and with which, indeed, all must be well acquainted before their arrival in this institution. "Military Surgery," the term which formerly comprehended all these subjects, was an evident misnomer. The denomination arose from the fact that the officers to whom the care of the sick, and, so far as it went, the prevention of sickness, were entrusted, have been usually styled "Military Surgeons." Surgery, which is essentially the art of healing applied to external diseases and injuries, and the manual operations for their cure, forms but a small section even of the sickness among soldiers, as it did but a small portion of the course of lectures delivered on "Military Surgery," so called. The misnomer unfortunately led to much misapprehension on the part of the civil members of the medical profession; so much so that, on the Professorship of Military Surgery being established three years ago at Dublin, one medical journal, of high repute, discussed the question—"Is the institution of chairs of military surgery, a wise and useful measure?" and concluded by asserting the negative, because they only did imperfectly what was better done elsewhere. The arguments were obviously based on an erroneous view of the function of the teacher of military surgery, as well as of the position and duties of military surgeons. It is the practical application of general principles, already acquired, to the special duties and circumstances of military life, that the authorities require we should study in the Army Medical School; and this is the object for which the Government are anxious to afford every facility.

Here is the place to give an outline of the plan and the course of study proposed to be pursued in the session now just commencing. In order that the several candidates may have a greater amount of personal intercourse with the teacher n each department of study, and in consideration of the mited accommodation in the temporary buildings of the school, and in the wards of the hospital, it has been settled to divide the candidates at first starting into four groups. Of these four groups, one-half will be employed during the morning of each day in the practical work of the hospital, one in the surgical, the other in the medical division; the remaining half will be working, either in the laboratory devoted to hygiènic manipulations and experiments, or in the room appropriated to microscopical demonstrations. All the four groups together will attend, in the afternoon, the lectures to be delivered on the several subjects of each course of study.

As the practical work of the session will occupy four months, the fifth being devoted to examinations, it will be necessary after the first two months, that the two groups engaged in the morning work of the wards, shall change places with the two groups who have been employed in the hygiènic and microscopical rooms during the same period. By these means at the end of the four months, all the four groups, or, in other words, every candidate, will have gone through a practical course in each of the several divisions of the Army School work.

I will specify somewhat more particularly the objects of study in each department. Firstly, in the hygiènic. In this department instruction will be given in all the causes which specially affect the health of soldiers, whether diet, clothing, habitation, education, habits, and mode of life, their peculiar duties in time of peace, or situation and circumstances in time of war. The methods of determining the quality of the water the soldier drinks, of the air he breathes, and of the several articles of his food, detecting their deficiencies, adulterations, or impurities, will be described and demonstrated; and each candidate, in turn, will repeat, in the laboratory the processes he has heard described in the lecture room. The principles of ventilation, warming, draining, cleansing, and of all architectural arrangements which may render his barrack healthy or unhealthy, and the best means of remedying these when faulty from original construction, will be explained and illustrated. The great importance of a thorough acquaintance with these topic cannot be overrated; for all who are acquainted with military service are aware how frequently medical officers are appealed to for information in such matters, and, by the new regulations, not only will such appeals occur more frequently in future, but the opinion and decision of the medical officer will also have greater weight with the executive authority.

In addition to the subjects I have already named, the professor of hygiène will consider the effects of military exercises, and the advantages of a regulated system of gymnastics; the conditions connected with particular soils and geological formations; camp diseases and army epidemics, their causes and management, and the preventive measures necessary to be adopted to meet the various sources of these and other diseases, whatever their origins may be. The effects of military life in Great Britain, in the colonies, in campaigning in various climates, in bivouac, tents, or huts, on board transport ships, will also be shown; and the sanitary regulations required for the preservation of the health and efficiency of the soldier in each condition explained; and to make the course more practical, in addition to the illustrations afforded by diagrams and models, the professor proposes to accompany his class in visits to barracks, transports, encampments, &c. whenever an opportunity of doing so shall be available.

In the microscopical room each candidate will be supplied with a microscope, and, under the professor of pathology, will be instructed, not only in the use of the instrument itself, and the mode of preparing microscopic specimens, but, with its aid, will pass through a regular course of practical study in the minute anatomy of morbid tissues. In the post-mortem inspection room, a close and scientific investigation will be made in each instance of death, under the direction of the professor; and these investigations, being accompanied by a perusal of the medical history sent from the station from which the patient had been invalided, and of the further history collected while under treatment in the General Invalid Hospital, will give the opportunity of storing up a large fund of practical instruction. The necrological register, in which the results of these inspections will have to be systematically entered by the candidates, will be of permanent interest, and its records will be capable of being turned to valuable account in many ways. The advantages of these pathological studies will not, it is hoped, be confined to the school, but medical officers generally, on becoming aware of the attention devoted to these subjects at home, will bestow more attention on the accuracy and completeness of the histories which they are accustomed to forward from abroad. The extensive collection of diseased structures, and the illustrations of the effects of injuries in war, in the museum, will be used by the professor of pathology, as means of supplying information calculated to be of the greatest advantage to the candidates, especially afterwards, when, as medical officers, they find themselves charged with the care and treatment of soldiers labouring under similar diseases and injuries, in climates, or under circumstances corresponding with those which have furnished the materials of the professor's illustrations. The best modes of making and preserving pathological preparations for the museum will also be practically taught; so that the usefulness of this collection, already one of the best in the world of its kind, may be still further extended. The wide distribution of the medical officers of the British army gives them an opportunity of supplying such illustrations more extensively than is possessed by any other body of medical men, and I am sure this opportunity will not be neglected, if it be once known that the results of their labours will be properly appreciated and cared for on reaching their destination at the general museum of the department.

In the surgical division of the hospital, the candidate will be initiated into the regular order of duty in a military general hospital, and will be made familiar with the authorized mode of recording and registering cases, compiling returns, and preparing the reports, by means of which the statistical and professional information required by the Director-General of the Army Medical Department is supplied. While engaged in this instruction, the cases placed in charge of each candidate for observation and treatment, will serve to illustrate the consequences of a great variety of surgical diseases and injuries, incidental to military service, and will furnish material for clinical instruction. In this division will also be seen frequent examples of men rendered unfit for service by physical malformations and defects which have been overlooked in recruiting; and while the results of such mistakes will be impressed on the mind by these means, it will be part of the morning's work to acquire such a system of examination of recruits as will ensure attention to each essential point of observation, and obviate as much as possible the occurrence of oversight on the part of the surgeon, or the success of deception on the part of the man seeking for enlistment. The examination of invalids, whether men disabled by manifest incapacity for service, or men seeking to leave the service on the plea of disabilities which are exaggerated, or, as sometimes happens, altogether feigned, will be a frequent exercise. The application of bandages and splints, the internal arrangements of the cases, and familiar use of the instruments selected for use in military service, regional anatomy, with special reference to wounds, and all the various surgical operations which can be practised on the dead body, will also form part of the practical work performed in this part of the school. Lectures on certain diseases, and the injuries to which soldiers are sepecially liable, such as gunshot wounds, and the other accidents of war; on the means of transport of sick and wounded in various countries; the surgical arrangements necessary in the various conditions resulting from military operations, and on such other subjects as may be capable of being treated in discourse, will form the occupation of the after part of the day. The pathological and model museums will afford valuable assistance in illustrating these topics.

It will also be the duty of the Professor of Surgery to point out the relations of the army surgeons to the officers of other departments of the military service, to explain the regulations authorized for maintaining discipline and good order in the army, and the overruling necessity which exists in military affairs for unity of command based on a graduated scale of power and responsibility.

The course on military medicine will consist also of two parts, the practical or clinical instructions in the wards, and the systematic lectures on army diseases. In these will be included the various methods of diagnosis of the diseases presented by sick soldiers returning from foreign stations, their history, nature, and management, and the means of detecting them in their early stages. The rise and progress of particular epidemics in British and other armies, the diseases induced in soldiers by fatigue, exposure, particular duties, intemperance, and other special causes arising from the various colonies in which soldiers are required to serve, will be considered. The hospital regulations, and the forms of the required medical returns, and instruction in the general duties of army hospitals, will also form part of the course of teaching by the Professor of Medicine.

I have thus given you an outline of the plan of study, and the particular subjects which will occupy attention at the school. It is calculated that by 3 o'clock the regular series of practical and lecture instructions will be concluded for the day, and that from that hour until the time of assembling for mess, the candidates will be free for exercise and recreation, or study in the library, those only excepted who may be occupied in duties connected with the sick in the medical or surgical divisions of the hospital.

All present are, doubtless, well aware of the valuable improvements in respect to pay, position, and pension, which, as compared with their predecessors, medical officers now enjoy, from the Royal Warrant of the 1st October, 1858, one of the greatest boons ever conferred on the medical department of the army. My only object in alluding to this subject is, that we may consider if, on the one hand, these are our advantages, what, on the other, are our obligations, and to what results should they act as incentives. Passive enjoyment of benefits conferred, contentment with an indifferent transaction of the daily routine of business, the avoidance of reprimand or disgrace, will no longer suffice, if we intend to consult the satisfaction of our own minds, or secure advancement in our profession. There have always been many exceptions to success following such a line of conduct as I have just indicated, men who have risen by active, and not passive qualities, but what have hitherto been exceptions, must in future become the rule. All the changes which have lately been made in the department have this purpose in view. For the several changes themselves we owe a deep debt of gratitude to the members of the Royal Commission who recommended them, especially to the late Director-General, Mr. Alexander, who, as one of the members, worked so earnestly and so sincerely to obtain them; and to the present enlightened Secretary of State for War, Mr. Sidney Herbert, who, by his influential position, has since contributed so much to their establishment; to the country, as represented in Parliament, for the support it accorded to them; to his Royal Highness the Commander-in-chief, and to the general and other commanders for their testimony in favour of the medical officers as a body; and to our Most Gracious Sovereign, who was pleased to order that the recommendations should take practical effect. These debts must be discharged; and I am confident I speak truthfully in saying that the surest way of doing so will be by each, in his particular sphere, contributing to solve the great problem of lessening the rates of sickness and mortality in Her Majesty's forces; for by such means we shall best repay the country for its increased outlay in the medical establishment, and justify and gratify the feelings of those who have laboured in the cause of our improvement. That this problem may be solved, if our endeavours are earnest, there cannot be the least doubt; indeed, we shall be disgracing our profession if, with the improved applications of sanitary science, and with increased study of army diseases and injuries, this end be not accomplished. The health-rate in the army, not counting injuries from war, ought to be more favourable than that of the civil population in England, and of the European civil population in the colonies. The careful way in which the soldier is selected, so that when entering the army, if the recruiting duties are properly discharged, he ought to be free from bodily infirmity; his selection at an age when the frame is in a great measure set and decided; the expenses in his clothing, diet, and habitation, if well applied; the very nature of his exercises and duties, if judiciously disposed; these and other circumstances are all in his favour, as compared with those of the mass of the civil population, among whom, it is not to be forgotten, have been left those sick and weakly men unfit for military service, and into which the invalids disabled by military service, are continuously being poured. Instead, then, of the surplus of disease in the military as compared with the civil population, which was demonstrated with such painful clearness in the report of the Royal Commissioners, let us hope that before long these ratios will be reversed; and this will happen, as sure as cause is followed by effect in any other operations in which vital statistics are concerned, if the spirit of the new sanitary and medical system in the army be faithfully interpreted and acted upon. At any rate, let us all determine honestly to join in making the attempt. Recollect there is every inducement in the medical service for each officer to make personal zealous exertion. The successful issue of the professional pursuits in which he is engaged can depend only very partially upon the directions of his professional superiors, while the converse must usually happen in the military service. The power derived from combination and system is an especial quality of success in the combatant ranks; the value of the Medical Department depends, in a very great degree, upon the worth and intelligence of its individual members.

Mr. Sidney Herbert said that he wished to make a few remarks to those present on this occasion, although really what he had to say would be almost a plagiary from the able lecture which had just been delivered. He had been anticipated in many things he would have said by Professor Longmore. He had always taken a warm interest in all that concerned the health of the army; and, as President of the Royal Commission which had inquired into the sanitary state of the army, he must say that, as their inquiries extended, they found much that required remedy. The Commissioners had devoted much time to this inquiry, and had taken great pains in trying to devise plans for remedying the defects which were brought so prominently before them.

The Military Medical School which had now been instituted, resulted from this Commission; and while he was thus responsible for its origin, accidental circumstances had now made him officially responsible for its organization. The objects contemplated by the Government in establishing this school, were not only to give an acquaintance with the specialities of military medical life, but especially to teach the most approved methods of preventing disease. In this respect it was anticipated that this school ought to produce great benefit. There was no opportunity of learning elsewhere much that would be taught in it. The treatment of tropical diseases, and of diseases peculiar to soldiers, cannot be acquired in the civil schools. The position of the army medical officer, too, differed from that of his brother in civil life, especially in this, that the attention of the latter was, for the most part, taken up in curing disease, while he had very little opportunity of preventing it. Indeed, it seems almost against his interests to prevent disease. It was only the sick person who sent for the doctor, not the man that was well; and with the exception of the naval and military medical officers, it might, perhaps, be said that there were no medical men who could gain a livelihood, not by curing, but by preventing sickness.

He would especially say a few words to those who had just arrived to study at this school. He was aware their position was a novel one, and he knew that they were exposed to many sources of temptation to vice; but he hoped, that as medical officers, they would do their utmost to support the dignity of their profession. They must remember that they entered the service older in years than the young combatant officers with whom they would often associate,—whereas the combatant officers often entered the service as boys fresh from school. Besides this, the medical officer entered after having had the benefit of a scientific education, which, for the most part, the combatant officer had not had the advantage of having. He did not wish to put youth forward as a plea or justification for vice; but youth affecting manhood finds it easier to ape the vices of men than to emulate their virtues. Medical officers ought not merely to avoid such errors, but ought by their example and conduct to divert the tendency of their younger companions into a more useful sphere of action.

The relationship between the military and the medical element of the army had also of late years greatly changed. Commanding officers now felt the importance of having medical officers who could preserve the health of the men under their command.

He knew of a case where a medical officer went to the military officer in command and told him that unless such and such things were done, there would soon be a dreadful sickness among the men. The reply was: "When your advice is wanted, it will be asked for." Accordingly, nothing was done, but when the men were down with sickness, as had been predicted, then the doctor was sent for, but it was too late. Now it is very different. He had just been reading a letter from the Adjutant-General with the army in China. It conveyed the most gratifying accounts of the present excellent condition, as to health, of the China force, and it showed how much benefit had arisen from the appointment of a Sanitary Inspector. This was the first time such an appointment had been made. It was one of the new regulations, and was the result of the recommendation of the Royal Commission.

Dr. Rutherford, the sanitary officer, was visiting portions of the camp every day, to see that everything was as it should be. But this was not the only good result. He was assured that not only had his appointment of a medical officer charged especially with the sanitary supervision of the army had the best effect directly, but that it had also indirectly acted in a remarkable way, by rousing, not only the regimental medical officers, but the combatant officers to pay increased attention to hygiènic measures. He believed that no men now were more anxious to enforce and carry out sanitary measures for those under their command than the military officers. It had been anticipated that such would be the result.

Great advantages were now enjoyed by medical officers over their predecessors. Their position, especially in the earlier part of their career, had been greatly improved by the new warrant. Their rank, pay, and influence, had all been augmented. The country would now naturally look for some return for these advantages, and he trusted the gentlemen now present would endeavour, on their part, to profit to the greatest extent by the advantages the Government have afforded them in the establishment of this school. If they showed, by their increased intelligence and zeal, that they were worthy of these advantages, the country would not grudge the cost, but they would be expected to prove their superiority to justify the outlay, and he felt certain that they would do so. He concluded by wishing them every success and happiness in their new career.

General Eyre said that he most cordially concurred in the remarks made by Mr. Sidney Herbert. He must candidly say, from what he had heard, that the young medical officers at Chatham had gained anything but a good reputation for themselves; so that some of his predecessors had had occasion to find great fault with them. This, however, had not been the case during the time he had been in command—now two years—and he must acknowledge that he had scarcely ever received any complaint against them. He would also specially mention that the conduct of the young men who had been recently sent down to do duty at Fort Pitt (and who were amongst the number of those he saw before him) had been most exemplary. Indeed, nothing could be more satisfactory than the conduct of the young medical officers who had been at Chatham of late, and he hoped this would continue.

The Director-General of the Army Medical Department said, that, as the head of the department to which the candidates belonged, he, too, would say a few words on this important occasion. He hoped especially that they would profit from the remarks of the Right Honourable the Secretary for War, to whom the institution of this school was mainly owing. He trusted, also, that they would continue to give satisfaction to the General who commanded them, and to the Principal Medical Officer of the station. He observed that, after the gentlemen had completed their period of probation here, they would have to undergo examinations on the topics they had been specially studying. No one would receive a commission who did not acquit himself creditably, or who did not give satisfactory evidence of being qualified for the practical duties of an army medical officer. On the other hand, those who did pay the most attention to the subjects taught, and who were found at the examinations to have profited most by their studies, to them he intended to give the first and the best appointments. They should be sent to the most popular stations or to the regiments which were considered the best, as far as the exigencies of the service would allow.

The meeting then separated.

XIV.

Relations of the Medical Department and its Officers to other Departments of the Army.—Organization of the Medical Department.

A knowledge of the nature of Military Medical Service necessary.

Gentlemen,—It is part of my duty to make you acquainted with the general regulations of the medico-military service, as well as the relations of the Army Medical Department, and its officers, to the other departments of the army with which they are connected; and, indeed, it seems to me to be a necessary preliminary step to the course of study which you have come here to undertake, that you should obtain a correct appreciation of the nature and extent of those obligations and duties, as military surgeons, which this study is intended to prepare you for. No person, in the ordinary transactions of life, enters into an engagement which he binds himself down to fulfil under certain penalties, without making himself conversant, to the full extent of his ability, with the obligations he undertakes and the responsibility he incurs. But, in the medical part of the military service, there can be no doubt that, to a very great extent, this has not been done hitherto. No study was made, not even a perusal of the obligations undertaken, nor of the regulations to which he, the surgeon, by his initiatory declaration, bound himself. A contract was made, to which one of the contracting parties signed his assent, with only the most general notion of its provisions, while the other held in possession all its terms described with legal accuracy in every detail.

Advantages of an acquaintance with the Rules of the Service and Organization of Medical Department.

Every one acquainted with the service must have observed that much disappointment and misapprehension, on the part of surgeons, and trouble both to military and medical authorities, have resulted from the superficial acquaintance of the nature of the military medical service obtained by surgeons at starting on their career. A brief survey of the duties of medical officers, and the nature of the Medical Department as at present organized, may be the means of preventing future disappointment of this kind; and the time spent in making the survey will therefore not be spent unprofitably. A knowledge of the particular duties which you will be called upon to perform hereafter will also enable you to determine in your own minds to what portions of the practical studies now in progress you each require to pay more especial attention, and will stimulate you to the acquisition of increased knowledge and experience in all. In the latest editions of the Queen's Regulations for the Army, the Army Medical Regulations, and in the Warrant regulating the Rank, Pay, Promotion, and Retirement of Army Medical Officers; in the Mutiny Act, and Articles of War; you will find in detail the several matters, to the chief features of which I shall now proceed to refer as fully as our time will admit.

Medical Officer's Commission.

The engagement of an army surgeon is a contract of service with the State at large, the appointment emanating from the highest authority in the realm, the Sovereign of the country. The commission which a medical officer receives not only requires the careful and diligent discharge of his professional duties, but also the observance of all such orders and directions as may from time to time be issued by Her Majesty, or any of her superior officers, according to the rules and discipline of war; and one of the first clauses in the Mutiny Act, which is passed annually by Parliament, defines that all persons who are commissioned, or in pay, as officers, are subject to all the provisions of that Act, and to all the rules and articles for the government of Her Majesty's forces, enacted by the Queen, and published by Her Majesty's command.

Liabilities o Military Medical Officers.

Although unconnected directly with your professional pursuits as surgeons, as army surgeons you will find much that it is important for you to know concerning military law and economy, in the Act of Parliament known as the Mutiny Act, and in what are commonly called the "Articles of War," and I would recommend you at your leisure to peruse them. They are usually found in the hands only of combatant officers, but a large proportion of the regulations embodied in them apply to yourselves equally with all other branches of the service. The Articles of War comprehend the duties and obligations which result from the commissions conferred by her Majesty, the nature of what are commonly known as "Military crimes," in contradistinction to crimes against morals, or the general law of the land, and their punishments. These are classed under offences in the field, camp, garrison, or quarters; and include absence without leave, insubordination, drunkenness while on duty, or other disgraceful conduct, and such miscellaneous offences, as striking or otherwise ill-treating a soldier, permitting or engaging in duels, and all conduct included under the general charge of "tending to the prejudice of military order and discipline." Here you will also find the composition and extent of power of courts-martial, as well as the mode of proceeding to be adopted in military medical boards convened for the inspection of officers who have received wounds in action, and who may be supposed to be entitled to pensions for the injuries they have suffered. You will also find in these Articles the legal enactments which regulate the engagement, position, and course of life of the soldiers with whom you are to live, and whom you will have professionally to protect from mishap, and to treat when sick, and in whose history you must therefore naturally feel an interest. The manner of the soldier's enlistment, his privileges, his crimes, and their punishments, the nature of military imprisonment, the system of billeting, circumstances connected with the discharge of soldiers, and indeed nearly all the most important laws affecting both the general and special relations of the soldier to the State and constituted authorities of the country and civil part of the population, are to be found in these pages.

Relations of he Medical to ther Departments of the Army.

The rules by which the interior management and economy of all the departments of the army have to be conducted are concisely and clearly laid down in the book known as the "Queen's Regulations and Orders for the Army." An acquaintance with these orders is not left to your option; by command of His Royal Highness the General Commanding-in-chief, "Every officer in Her Majesty's service is to provide himself with a copy of the Regulations and Orders, and to make himself perfectly acquainted with them," and commanding officers are made responsible that this command is duly observed. Whereas, in the "Mutiny Act" and "Articles of War," the external relations of the army, and of the officers and men comprising it, are chiefly defined: in the Queen's Regulations, the internal relations of the several parts of the army to each other, and the mode in which its business is to be conducted, are principally described and dwelt upon. It is obvious that an acquaintance with these rules is not merely desirable, but absolutely necessary, for properly conducting the ordinary business of military affairs. I will indicate some of the leading subjects connected with yourselves and your future duties, which you will require to refer to the Queen's Regulations for authorized information upon. The relations of the Medical Department to other departments of the army are there laid down, and your own position in respect to rank, choice of quarters, and other matters, as compared with the combatant officers, whether of the army or navy, are there defined. The rules and forms under which leave of absence is to be applied for by medical officers, whether on private affairs or on account of ill health, are contained in this book; the circumstances under which leave may be granted, and what steps are to be taken in case of an officer being absent without leave. The orders regulating the interior economy of regiments are detailed in the Queen's Regulations; and as, to quote the words of one of these Orders, "All officers are at all times, and under all circumstances, accountable for the maintenance of good order, and the rules of discipline in the service," to obey this it is essential that you should take the earliest opportunity of learning what these rules are. The management of hospitals, including the supervision required from commanding officers of all grades; the punishment for gaming, disorderly behaviour, or misconduct of any kind on the part of the patients; the arrangements for the military protection of the sick; the duties of medical officers with respect to preserving order, regularity, and cleanliness in the wards, and paying proper attention to the patients; the disposal of convalescents; the rules by which medical officers are to be guided in supplying diet, medicines, wines, and other allowances to sick soldiers of other military corps not under their immediate charge, as well as to sailors of the Royal Navy, and persons belonging to the civil branches of the war and naval service; the superintendence of men of the Army Hospital Corps, and the manner in which the military discipline of the corps is to be maintained, are defined in this book. Other duties of medical officers, and the rules for the professional management of general and regimental hospitals, and the preservation of the health of the army, are contained elsewhere, in the "Code of Medical Regulations."

Economy of Hospitals, and special duties of Army Medical Officers defined in the Queen's Regulations.

A very important duty of medical officers is the medical charge of troops proceeding by sea from one to another station, and it is to the Queen's Regulations you must refer for information respecting the manner in which the ship in which the troops are to embark is to be fitted and provided for their reception: the rules for the examination of the troops themselves: the diseases which are to render men objectionable for foreign service, and ineligible for embarking: the description and specification of the rations of provisions for troops on board ship: the kinds and amount of medical comforts to be placed on board for the sick: the Admiralty regulations for their accommodation: the duties of all ranks on board: and the regulations defining the means by which cleanliness, ventilation, exercise, and general sanitary arrangements are to be maintained so as to insure the preservation of the health of the men in warm climates, as well as during protracted voyages.

These are some of the rules which you will require to study for your guidance in certain of your special duties as military medical officers, and I will now briefly call your attention to the regulations for your *general* professional conduct and business in the service. These are chiefly contained in the "Code of Medical Regulations," to which I have before casually adverted.

It will be convenient to consider, firstly, the objects which it is intended should be attained by the employment of medical officers in the army; secondly, to survey the organization of the Medical Department by means of which the attainment of these objects shall be facilitated and insured.

Professional duties of Army Medical Officers.

Firstly, the objects to be attained. These are threefold: viz., the prevention of disease, and the preservation of the health of troops: the cure of disease and injuries, when they have occurred, by proper medical and surgical treatment; and the scientific tabulation of the medical statistics of the army.

In the enumeration of the three principal branches of professional duty of the army medical officers, I have placed the prevention of disease and the preservation of the health of troops first, because it is undoubtedly first in importance as regards economy in the expenses of the country, comfort of the individuals, and efficiency of the forces at large. "The medical care of sick soldiers," it has been observed,* "is one of the most important concerns of an army. It claims a place of high consideration among the means provided in war; for, independently of the kindnesses of humanity, and of the gratitude due to those who risk health and life in defence of their country, there is economy, or greater saving of public money, in providing even an expensive medical treatment for sick soldiers, than in supplying the deficiencies which arise from diseases contracted in service, by a fresh levy of recruits on the mass of the people, or at a foreign market." This will doubtless be demonstrated to you by the Professor of Hygiène by examples of the fatal consequences of neglect of the sanitary function in armies, and, on the other hand, of benefits which have resulted from its judicious exercise.

Sanitary duties.

The exercise of this duty is not to be confined to especially-appointed sanitary officers, although, under certain circumstances in armies, officers of health are now ordered to be appointed, who will have to devote their whole time and attention to sanitary arrangements; but army medical officers of all grades, each in his respective sphere, are ordered to be sanitary officers in future. As assistant-surgeons, you may find yourselves in medical charge of detachments in barracks, on the line of march, and in transports; as surgeons, in medical charge of battalions, or at the head of hospitals; as principal medical officers, at the head of bodies of troops collected together in camps, districts, or garrisons; and in all these situations it will be your duty to lay before the officer commanding the force, for his consideration, whatever may appear to you to be injuring the health of the troops, or whatever may appear to be necessary to insure its preservation. The Order directing medical officers to discharge this duty is the following:—"The Medical Department of the Army and its officers are not only intrusted with the medical care of the sick, but with the duty of recommending to commanding officers verbally, or in writing, whatever precautionary measures as to barracks, encampments, garrisons, stations, hospitals, transports, diet, dress, drills, and duties, may, in the opinion of the department and its officers, conduce to the preservation of the health of the troops, and to the mitigation or prevention of disease in the army, whether at home or abroad. But in the event of any verbal representation not being complied with, the medical officer shall make a representation in writing on the subject to his commanding officer."* Of course, the commanding officer, who is supreme, may adopt, or not adopt, as he thinks proper, the recommendation of his sanitary adviser; and it will frequently happen that pecuniary, or, in time of war, strategic considerations, will have to be weighed against hygiènic considerations, and what may appear the most important to the medical officer will have to be overruled by necessities of which the commanding officer is the most competent judge. But now that the principles of sanitary science are to be taught as a special branch of study, and that the application of these principles to all the circumstances of military life are to be illustrated in the practical courses of hygiène at this school, it is reasonable to infer, not only that by these means the knowledge of medical officers of the army generally will be greatly advanced on these subjects, but also that the recommendations which may be given by them in accordance with this extended experience, will acquire proportionably increased influence with those in whom the executive authority is vested. The increased responsibility thus thrown upon you, doubly increased by the regard which henceforward sanitary suggestions may be expected to receive, should make you study the subject very carefully, should put you on your guard against prejudice, against imperfect and hasty conclusions, and should excite you to display increased prudence and circumspection in your conduct. You must each recollect that advice offered, if unsound, inappropriate to the occasion, and on such account warrantably rejected by the executive authorities, will not merely be productive of temporary discredit to yourself, but will lessen the weight of your future influence, and must, to a certain extent, depreciate the character of the department whose honour and credit it will your duty, as one of its members, to sustain, and, as far as lies in your power, to extend.

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* Dr. Robert Jackson.

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* Medical Regulations, chap. xx, art. 1.

rsonal ygiène of roops, &c.

The rules of the service *specify* certain hygiènic duties which medical officers are ordered to perform, and these have been classified under four heads: "Personal Hygiène of Troops," "Hygiènic Duties in Barrack, Quarters, and Hospitals," in "Garrisons and Camps," and fourthly, in the "Field and in Transport-ships." Under "Personal Hygiène" are embraced the orders for the examination of recruits before final approval in regiments, the weekly inspections for detection of certain diseases and for personal cleanliness, the practice of vaccination, periodical examinations of the rations and drinking water supplied to the troops, the cooking, and the games and gymnastic exercises, so far as they bear on the health of the men. Under duties in barracks, &c., are comprehended the directions to medical officers for ascertaining, by frequent visits to barrack-rooms, quarters, guard-rooms, hospitals, cells, and married soldiers' quarters, that their cleanliness is attended to; that the number of men in the rooms and guard-rooms accords with the regulated cubical space; that the means of ventilation and light in all the rooms and outbuildings, as well those frequented by soldiers, such as schools, reading-rooms, &c., as those inhabited by them, are sufficient and in effective operation; that the airing of their bedding is attended to; and, in short, that their general sanitary condition is maintained.

anitary duties n Camps, ransports, &c.

Under sanitary duties in camps and stations, the senior medical officer, in the absence of a special sanitary officer, is ordered to exercise a general sanitary supervision over all parts occupied by the troops, and their vicinity, and to represent and recommend to the officer commanding whatever he may consider necessary for promoting health, whether as regards the abatement or removal of local causes of sickness, or alteration of diet, clothing, &c., and any measures of precaution which appear requisite for preventing epidemic disease, or mitigating it, if such disease appears. Copies of all such recommendations are invariably to be sent to the Director-General. Under sanitary regulations for field service, directions are issued corresponding with those for the sanitary supervision of garrisons and camps;—in addition, the medical sanitary officer is ordered to assist by his advice, so far as concerns the health of the troops, in the selection of the sites for encamping; in the position and regulation of latrines and slaughtering places; the burial of the dead; the amount of occupation of tents or huts, and their arrangement; the surface drainage; the preservation of the water supply in a state of purity, and other such arrangements. He is also ordered to make recommendations for organising a proper sanitary police for the removal of nuisances, and the execution of those sanitary measures which he may consider necessary for promoting the health of the force. Under the class of duties in transport ships are included directions for the preliminary inspection of the ships as to their tonnage, accommodation, and means of ventilation, relative to the number of troops or sick to be embarked; the means of removing offensive bilge-water as it accumulates, and the general cleanliness and sanitary condition of the ship; and further, that the supply of drinking water, provisions, medical comforts, bedding, cots, medicines and instruments, &c., is sufficient for the voyage, and good. The medical officer who goes in charge of the troops and sick is ordered to keep a constant watch over the sanitary arrangements on board, according to the instructions in the chapter of the Queen's Regulations relative to the "Duties on board ship," before adverted to.

I have thus given you an outline of the sanitary duties which will devolve on you, as medical officers of the army, by orders of the Commander-in-chief, according to the regulations recommended by the Secretary of State for War, and graciously approved by her Majesty. The *scientific execution* of these duties will be taught you elsewhere.

Medical a Surgical duties.

The next sphere of duty in which medical officers are habitually employed is the professional treatment of the diseases and injuries incidental to the military service. This province of medical duty at once divides itself into two parts: the educational, and the part comprehending the means placed at the disposal of medical officers for applying their knowledge to the interest of their patients.

It is the object of Government to obtain, for the benefit of the army, medical officers as highly trained and educated as possible, to fit them for the most efficient discharge of their numerous professional and scientific functions. The means adopted for selecting from the candidates for admission to the service those among them most thoroughly qualified you are already acquainted with, having passed through that ordeal successfully.

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The organization of this school, including the subjects to be taught, the arrangement for the course of study, the examination which is to follow at the conclusion, has been already remarked upon, and you are in possession of its regulations in detail in the printed pamphlet on the subject issued by the War Office during the present year. One other point bearing on the subject of education, is the examination which assistant-surgeons now have to undergo prior to promotion; its object being to ascertain that each officer has kept pace with the progress of medical science during the earlier part of his career in the army. The rules for this examination are appended to the Warrant regulating the rank, pay, promotion, and retirement of army medical officers, which is included in the book of Medical Regulations.

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But equally necessary with good education and sound knowledge, are efficient means for their proper application,—in other words, a well organized and efficient hospital system. Great changes have of late been made in the organization and equipment of military hospitals, and an allusion to the system, as it now exists, will be useful for our present purpose. The authorized hospitals are of two kinds,—regimental and general; the former established for the reception and reatment of the sick and hurt of the regiment to which it belongs, and moving with it; the latter, for the sick of all corps indiscriminately of her Majesty's service, and generally having a more or less permanent character. Regimental hospitals are under the immediate supervision of the officers commanding the regiments, and the officers commanding the brigade or stations under whose command the regiment is placed; they are also under the direction of their respective regimental surgeons, subject to the general instructions and superintendence of the Director-General of the Army Medical Department, and the officer representing him and acting under his orders. A general hospital is under the supervision and control of a governor or commandant, who is held responsible for the discipline and good order of the whole establishment, and whose decisions on all questions submitted to him, are final, subject only to appeal to the Secretary of State for War; but, in case the governor is absent, the powers and duties of commandant are exercised by the principal medical officer.

Varieties of Hospitals.

The principal medical officer, acting under the directions of the Director-General, has the control of everything belonging to the medical department of the hospital. Special provision is made for field hospitals, their equipment, and means of transport; but these will have to be considered at more length hereafter, when speaking of the medical arrangements of armies in the field. The proportions of field equipment, and means of transport, relating to the strength of each division of the army, are now laid down in the Medical Regulations.

Statistical duties.

The statistical duties of army medical officers, like the hygiènic, are now ordered to be systematically observed by all medical officers, and instructions for performing them in all the several branches to which they refer are laid down in the new Medical Code. In time of peace the statistics of the army are shown in *weekly* periodical returns, which have to be prepared and forwarded by all medical officers in charge of soldiers, as well of those in health as those in sickness. They are so arranged as to enable the Director-General, and, through him, the Commander-in-chief and the "Government, to judge of the comparative healthiness of every station and every barrack, to trace the sickness and mortality to their various causes, to ascertain the comparative influence of each, and to take the precautions and apply the remedies which the case may require." In time of war, when an army is in the field, the statistics are shown in *daily* returns, of the same form as the weekly returns in time of peace, so that the principal medical officer, and, through him, the Commander of the Forces, may know, again to use the words in the report of the Royal Commissioners, "The past and existing rate of sickness and mortality in the army, what are the causes of it, and for what time at a continuance of the same rate, and with what reinforcements, he can maintain his army in the field." They also enable the home authorities to compare the health-rates of the army with those of civil life, and with its own rates at previous periods. Other statistical returns furnish registered information respecting all men examined as recruits, whether accepted or rejected, such as their physical characteristics, place of birth, occupation, state of education, and cause of rejection if found unfit,—their diseases, or defects, being systematically classified. Others again supply information on the diseases, wounds, or infirmities for which men are invalided from the service, showing their characters, ages, station whence invalided, and ultimate disposal of each man. Every recruit now, on entering the service, has apportioned to him what is called a "Medical History Sheet," in which are briefly recorded from time to time all circumstances bearing on the medical history of the man, continuously throughout his military service, up to the date of his death or discharge. After either of these events, this document is transmitted, through the proper channel, to be placed among the records in the office of the Director-General of the Army Medical Department. A vast amount of important information respecting the health of the army it is expected will be made available by reference to these documents. Other minor sources of statistical information you will find in the Medical Regulations; both the forms of the returns themselves and the instructions in the proper method of filling them up and supplying the information required. The nosological terms used in preparing statistical tables in the army, are in accordance with the nomenclature determined upon by the members of the European Statistical Congress which was convened by the Government of the Emperor of the French, and first met in Paris on the 10th of September, 1855, and are the same as those which are employed in the returns of the diseases of the civil population. Up to a recent period the nomenclature was that of Cullen's *Nosology*, which dated from the year 1780, and had become too antiquated to be applied to any practically useful purpose.

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ent.

Within a recent period the *constitution* of the medical department of the army itself has been remodelled, and it is as well that you should have an insight into the present plan of its organization. The department, then, is subdivided, and consists of,—1st, the medical officers of the army, to whom the medical and sanitary duties, management of hospitals, and statistics of the army are committed; of officers, whose duties consist in providing the necessary hospital stores, equipments, and dietary, in keeping the returns of supply and account, in issuing clothing and providing for the washing of the linen of the patients, in getting all repairs urgently required in the hospital executed, —these officers bearing the name of purveyors; of other officers responsible for the care of the medicines, medical stores, and surgical appliances, under the name of apothecaries; of dispensers and compounders for preparing prescriptions, these two sets of officers being combined in one division, the dispensing department; of the Army Hospital Corps, from whose ranks come the masters of wards, orderlies, cooks, and others, and to whom are directly entrusted the personal attendance upon the sick, day and night; the cleanliness of the hospital; charge of the kit, clothing, and all other property of every patient in hospital; and the cooking and apportioning of diets according to the diet rolls. The regulations also provide for an establishment of female nurses, to be employed solely in general hospitals. These are the various divisions or sub-departments, which, combined, constitute what is termed as a whole the Army Medical Department. Each of these distinctly-functioned divisions have their particular code of regulations, so ordered, that the mode of working of each shall be in accord with, or subservient to the plan of business in the rest, and that the whole may move together in harmony; in the same way that the Medical Department itself, as a whole, is intended to move and work in harmony with the arrangements of all the other principal departments of the army. If from want of knowledge of the nature of these mutual relations, an attempt is made to transact affairs in a manner otherwise than that which is authorized, much time is lost in the necessary rectification of the error in various offices, and business is impeded. It is, therefore, necessary that officers should have a general understanding of the connexions of their own department, with the others with which it is in relation, to avoid the mistakes just indicated.

Organizat of Medica Division c Army Me Departme

The purely professional division of the Army Medical Department consists of two sets of officers, the administrative and the executive. The executive has two grades, viz., assistant-surgeons, staff or regimental; and surgeons, whether staff surgeons, regimental surgeons, or surgeons-major. The inspecting ranks are also of two grades, deputy inspectors and inspectors, acting under the Director-General, who is the sole responsible administrative head of the department.

Executive Officers.

The duties of the executive officers consist in taking medical charge of the troops, whether in corps or regiments, general or other hospitals, in prisons or on board ship, and in attending the general, commissariat, or other staff. They are employed in recruiting districts, in performing all the required sanitary duties, in making medical inspections of prisoners, in attending punishment parades, ball practice, field-days, &c. They are required to make up the professional returns, and to maintain the systematic registration of cases according to the regulated plan for performing this duty. Specific instructions as to the method of dividing these duties among the respective grades of assistant and full surgeons when associated, and again between those employed on the staff and those in regiments, are laid down in the Medical Regulations; but each, whether staff or regimental, or whatever the grade, is required to discharge any executive duty should the absence of associates render this necessary.

ninistra- Officers.

The duties of the administrative officers consist in making visits of inspection over districts at such times as the Director-General may appoint; to see that the sanitary and medical regulations of the service are duly observed; and that the medical, sanitary, and statistical records are properly kept; to advise with medical officers on matters connected with the mitigation or prevention of disease; to see that the state of the hospitals, the supplies, and all the arrangements for the care and treatment of the sick soldier in all respects are good and efficient; and the inspecting officers are required to report in detail to the Director-General all defects he may observe, recommendations he has made, and any suggestion for further improvement that may occur to him. As principal medical officers of districts, or of foreign stations, the administrative officers of the department are required to transmit to the Director-General regular statistical returns of disease and mortality, compiled from the returns received by him from the medical officers under his immediate direction, as well as general sanitary reports of the district or station under his charge. The Principal Medical Officers are also the authorized channel of all communications between medical officers and the head of the department, as well as for the transmission of the regular returns and reports. The Medical Regulations afford detailed information respecting the mode in which the history of diseases and their treatment are to be recorded, the number and form of the several periodical statistical and sanitary returns and reports required, and the times of their transmission. All these reports, returns, and correspondence, according to their nature, are arranged to pass through the Principal Medical Officer, in such a manner as ultimately to arrive at one or other of the heads of three distinct branches, medical, sanitary, and statistical, into which the office of the Director-General in London is divided, by whom, after having been properly examined or considered, as the case may be, the documents are finally submitted to the Director-General, if reference is required, or disposed of in its proper place, if belonging only to the routine business of the department or public service.

Purveying Division of t Army Medic Department.

The officers of the Purveying Department attached to general hospitals are engaged in providing hospital supplies and equipments under the governors or commandants, from whom they receive their instructions. In hospitals where there are no governors, purveyors act on the requisitions of the medical officer in charge, subject, in cases of apparent extravagance, to a report by the purveyor to the Purveyor-in-chief, who, if he thinks necessary, brings the case under the cognizance of the Secretary of State for War for his decision, after hearing the opinion of the Director-General. Purveyors also act in the same relation towards hospitals as barrack-masters act in the instance of barracks and other public buildings. The mode of conducting business in this department is regulated by the Purveyor-in-chief.

Dispensing Department.

The officers of the Apothecary's Department act under the immediate instructions of the Principal Medical Officer, who represents the Director-General. The dispensers act under apothecaries who are responsible for the efficient performance of the dispenser's duties. The men of the Army Hospital Corps are subject, in regard to discipline, to the orders of the officer commanding the station, but are under the superintendence and control of the Principal Medical Officer in respect to the discharge of their hospital duties.

Army Hospit Corps.

I have thus given you an insight into the constitution, objects, and conduct of business of the departmental sphere of action within which you have just entered; it has been, of course, but a very general survey, but it will not be without use if it leads you to seek for fuller information in the several authorized works to which I have referred you.

You have seen that army medical officers have a great variety of important duties to perform. You have seen them as medical officers performing their professional duties under the direction of the head of the Medical Department of the Army,—as military officers under the constituted executive authorities of the army. Under no circumstances are medical officers intrusted with military command, nor are they in a position to exercise it if they were, any more than purely military officers are in a position to exercise the functions of medical officers without the requisite education. Certain officers are specially appointed and trained for the duties of command, and we shall not elevate our footing one

Medical Officers have no executive command.

jot by omitting due respect to the authority placed over us; but, on the contrary, by so doing we shall adopt one of the surest methods of weakening that influence we may otherwise possess. It is essentially necessary in military affairs, whether on a large scale, or in smallest divisions, that one only should command,—that there should be, as in a watch, but one regulator; and obviously, it is an infinitely less evil that the machine should go too slow or too fast, than would be the confusion which must result from independent action in its several parts. The whole strength of military organization consists in unity and supremity of command, combined with a system of gradually delegated authority, and proportionate responsibility. I dwell upon this the more because I imagine it to be one of the dangers ahead which may damage medical officers in the army, and lead to curtailment of that increased weight which has been lately added to their professional position,—a position which, rightly employed, must prove of incalculable benefit to the service at large. It is right that this matter should be reflected upon, and understood at the commencement of your career. I have witnessed many instances in the course of my service, where comfort and prospects have been blighted, and the opportunity of much usefulness thwarted, by medical officers assuming functions which were not their own. On the other hand, I could mention others, where, by care not to infringe established rules, and by the exercise of a little judicious forbearance, medical officers, out of temporary trouble and displeasure, have arrived at increased esteem and credit among those of their superiors whose regard was of most value.

Never be so unwise then as to seek distinction by assuming the purely military office which does not belong to us. You may hereafter have many demands upon you for exhibition of courage, but under circumstances of a different kind from those of the combatant officer. His daring will be shown in risking everything, even to his life, whatever be the object of the orders under which he acts. If at any time you are called upon to display courage at the risk of life, there can only be one legitimate object for the act, the attempt to save the lives of others. Be proud of your profession, and of the distinctive marks and appointments by which it is denoted. It is one of the highest you can follow; second only to that which ministers to the eternal happiness of man, to whose temporal welfare and happiness it is your province to minister. You exercise it under the noblest circumstances,—in the service of your Queen and country. The very risks you may encounter in common with those whose sufferings you may be called upon to alleviate are in themselves sources of honour; and the highest honours are now open to all ranks, and freely given when won. The daily duties, the emergencies which so frequently occur in medical life, have a peculiar tendency to develope and foster such qualities as coolness in danger, intelligent courage, promptitude of decision, and self-devotion in conduct. And to preserve self-possession by the aid of reflection in the hour of general excitement, and amid the noise of battle; to exhibit under danger qualities of mind such as calmness and decision in the application of your professional knowledge,—of such unspeakable importance to your patients,—will do you more credit, and bring you more praise from the judicious, than the most brilliant display of daring which wild excitement ever led to. When the distinguished French surgeon, Baron Percy, carried his wounded comrade on his back while the bridge over which he was hurrying was being broken up by the fire of the enemy's batteries, it was not the mere sight of his daring that provoked the spontaneous burst of applause among the French troops who witnessed his conduct, but an innate admiration of his self-possession while devoting himself to an act of humanity. Many equally humane and courageous deeds have been done by British surgeons in our own time, as the ranks of the Victoria Cross sufficiently testify, and such instances should not be lost to recollection, but should be treasured up as examples, should circumstances arise to make similar calls on our professional devotion.

CIRCULARS, 1859.

VICTORIA R.

Whereas, We have taken into Our consideration the recommendations of the Commissioners appointed by Our authority to inquire into the Regulations affecting the sanitary condition of Our Military Forces and the Medical treatment of the sick and wounded of Our Army; Our Will and Pleasure is, that, from and after the date of this Warrant, the following rules shall be established for the future admission, promotion, and retirement, and the pay, half-pay, relative rank, and allowances of the Medical Officers of Our Army, and that by these Rules Our Commander-in-chief shall govern himself in recommending Officers for admission, promotion, and retirement.

1. The grades of Medical Officers in Our Army shall be four in number, viz.:—

(1.) Inspector-General of Hospitals.

(2.) Deputy-Inspector-General of Hospitals.

(3.) Staff or Regimental Surgeon; who, after 20 years' Full-Pay service in any rank, shall be styled Surgeon-Major.

(4.) Staff or Regimental Assistant-Surgeon.

2. No Candidate shall be admitted to the competitive examination for a Commission in the Medical Department of Our Army who does not possess such a certificate or certificates as would qualify a civilian to practise Medicine and Surgery; and no such candidate shall receive a Commission as Assistant-Surgeon until he shall have satisfactorily passed an examination in Military Medicine, Surgery, and Hygiène, after attending the authorised course in a General Military Hospital.

3. No Assistant-Surgeon shall be eligible for promotion to the rank of Surgeon until he shall have passed such examination as Our Principal Secretary of State for War may require, and shall have served on Full-Pay with the Commission of Assistant-Surgeon for five years, of which two shall have been passed in or with a Regiment.

4. A Surgeon, whether on the Staff or attached to Regiments, must have served ten years in the Army, with a Commission on Full-Pay, of which two must have been passed, with the rank of Surgeon, in or with a Regiment, before he will be eligible for promotion to the rank of Deputy-Inspector-General of Hospitals.

5. A Deputy-Inspector-General of Hospitals must have served five years at home, or three abroad, in that rank, before he shall be eligible for promotion to the rank of Inspector-General.

In cases, however, of emergency, or when the good of the service renders such alteration desirable, it shall be competent for Our Secretary of State for War to shorten the several periods of service above mentioned, in such manner as he shall deem fit and expedient.

6. Assistant-Surgeons shall, as a general rule, be promoted to the rank of Surgeon in the order of their seniority in the service, unless unfit for the discharge of their duties from physical or professional incompetence or misconduct. In cases of distinguished service, however, an Assistant-Surgeon may be promoted without reference to seniority; and in such cases, with a view to insure the responsibility attaching to an appointment made out of the regular course of promotion, the recommendation in which the services of the Officer shall be detailed, shall be published in the General Orders of the Army and in the "Gazette" in which his promotion appears.

7. All promotion from the rank of Surgeon to that of Deputy-Inspector, and from the rank of Deputy-Inspector to that of Inspector, shall be given by selection for ability and merit; and the grounds of such selection shall be

stated to Us in writing, and recorded in the office of our Commander-in-chief, the selection being made from the whole rank of Surgeons, whether styled Surgeons or Surgeons-Major.

8. The rates of pay of the Medical Officers of Our Army shall be in accordance with the following Schedule :—

	After 30 years' Service on Full-Pay.	After 25 years' Service on Full-Pay.	After 20 years' Service on Full-Pay.	After 15 years' Service on Full-Pay.	After 10 years' Service on Full-Pay.	After 5 years' Service on Full-Pay.	Under 5 years' Service on Full-Pay.
	£ *s.* *d.*	£ *s.* *d.*	£ *s.* *d.*	£ *s.* *d.*	£ *s.* *d.*	£ *s.* *d.*	£ *s.* *d.*
Inspector-General	2 5 0	2 5 0	2 0 0*	..	..	..	..
Deputy Inspector-General ..	1 14 0	1 10 0	1 8 0*	..	..	..	..
Surgeon-Major ..	..	1 5 0	1 2 0	..	..	..	..
Surgeon ..	..	..	..	0 18 0	0 15 0*	..	..
Assistant-Surgeon	..	..	..	..	0 13 0	0 11 6	0 10 0

* Or on promotion, should these periods of service not be already completed.

9. In addition to the pay of their ranks, Officers at the head of the Medical Department on foreign stations shall receive allowances at the under-mentioned rates, when serving under the following circumstances, viz. :—

If with an Army in the field, of 10,000 men or upwards . . 20*s.* per day.
If with an Army in the field, of 5,000 men or upwards . . 15*s.* „
If with an Army in the field, of any less number .. . 10*s.* „
If serving in a Colony where the forces consist of 1,500 men or upwards .. .. 5*s.* „

10. After the date of this Warrant every Medical Officer placed on Half-Pay by reduction of establishment, or on the report of a Medical Board, in consequence of being incapacitated by reason of ill-health, caused by wounds, or brought on by the discharge of his duties, shall be allowed the Half-Pay to which his period of Full-Pay Service may entitle him, according to the following Schedule :—

	After 30 years' Service on Full-Pay.	After 25 years' Service on Full-Pay.	After 20 years' Service on Full-Pay.	After 15 years' Service on Full-Pay.	After 10 years' Service on Full-Pay.	After 5 years' Service on Full-Pay.	Under 5 years' Service on Full-Pay.
	£ *s.* *d.*	£ *s.* *d.*	£ *s.* *d.*	£ *s.* *d.*	£ *s.* *d.*	£ *s.* *d.*	£ *s.* *d.*
Inspector-General	1 17 6	1 13 6	1 10 0	..	..	..	..
Deputy Inspector-General ..	1 5 6	1 2 6	1 1 0	..	..	..	..
Surgeon-Major ..	..	0 18 6	0 16 6	..	..	..	..
Surgeon ..	..	..	..	0 13 6	0 11 0	..	..
Assistant-Surgeon	..	..	..	..	0 10 0	0 8 0	0 6 0

11. With a view to maintain the efficiency of the service, all Medical Officers of the rank of Surgeon-Major, Surgeon, or Assistant-Surgeon, shall be placed on the Retired List when they shall have attained the age of 55 years, and all Inspectors-General and Deputy Inspectors-General, when they shall have attained the age of 65 years.

Officers thus superannuated shall be entitled to the rates of Half-Pay stated in the preceding Schedule.

12. Every Medical Officer who shall have served upon Full-Pay for twenty-five years and upwards shall have the right to retire upon Half-Pay, at the rate of seven-tenths of the daily pay he was in receipt of when thus retiring, provided he shall have served three years in the rank from which he retires, or shall have served in any rank for ten years in the Colonies, or five years with an Army in the field. But if he shall not have complied with any one of these conditions, he shall be entitled only to Half-Pay, at the rate of seven-tenths of the daily pay he was in receipt of before his last promotion.

13. Every Medical Officer thus claiming to retire, must give six months notice to the Head of his Department of his intention to claim this right, prior to his being allowed to retire; and no Medical Officer shall have a right to give such notice after he shall be under orders to proceed to any foreign station, until he shall have served at such station for one month.

14. If a Medical Officer is placed on Half-Pay from any other cause than those hereinbefore named, he shall only be allowed a temporary rate of Half-Pay (not exceeding the rates stated in Clause 10), for such period and at such rate as shall be assigned to him by Our Secretary of State for War, on a consideration of the length and character of the services rendered to the public by such Medical Officer.

15. On reduction of Establishment, the Surgeon and Assistant-Surgeon who are junior in the ranks, shall be the first reduced, and, on restoration to Full-Pay, the reduced Officers who are senior in their rank shall be the first restored.

16. The relative rank of the Medical Officers of Our Army shall be as follows:—

Staff or Regimental Assistant-Surgeon as a Lieutenant, according to the date of his Commission; and, after six years' Full-Pay service, as Captain, according to the date of the completion of such service.

Staff or Regimental Surgeon as Major, according to the date of his Commission; and Surgeon-Major as Lieutenant-Colonel, but junior of that rank.

Deputy Inspector-General of Hospitals as Lieutenant-Colonel, according to the date of his Commission; and, after five years' Full-Pay service, as Deputy Inspector-General, as Colonel, according to the date of the completion of such service.

Inspector-General of Hospitals as Brigadier-General, according to the date of his Commission, if with an army in the field, or after three years' Full-Pay service as Inspector-General, as a Major-General, from the date of his joining such army in the field, or according to the date of the completion of such service.

17. Such relative rank shall carry with it all precedence and advantages attaching to the rank with which it corresponds, [except as regards the presidency of Courts-martial, where Our Will and Pleasure is, that the senior combatant Officer be always President], and shall regulate the choice of quarters, rates of lodging money, servants, forage, fuel, and light, or allowances in their stead, detention, and prize-money. But when a Medical Officer is serving with a Regiment or Detachment, the Officer commanding, though he be junior in rank to such Medical Officer, is entitled to a preference in the choice of quarters.

18. Medical Officers shall be entitled to all the allowances granted by Our Warrant of 13th July, 1857, on account of wounds and injuries received in action, as combatant Officers holding the same relative ranks.

19. Their families shall in like manner be entitled to all the allowances granted by Our Warrant of 15th June, 1855, to the families of combatant Officers holding the same relative ranks.

20. Medical Officers shall be entitled to field allowances, at home

and abroad, at the following rates, subject to all the conditions and restrictions laid down in Our Warrant of 1st July, 1848 :—

Daily Rate.

	Ordinary.	Extra-ordinary.
REGIMENTAL.	*s.* *d.*	*s.* *d.*
Assistant-Surgeon, under Six Years' Service	1 0	2 0
„ „ above Six Years' Service	1 6	2 6
Surgeon	2 6	4 6
Surgeon-Major	2 6	4 6
STAFF.		
Assistant-Surgeon, under Six Years' Service	1 6	2 6
„ „ above Six Years' Service	2 0	3 6
Surgeons	3 0	5 0
Surgeon-Major	3 0	5 0
Deputy Inspector-General, under Three Years' Service	4 6	7 6
„ „ „ above Three Years' Service	6 0	10 0
Inspector-General of Hospitals	9 0	15 0

21. Surgeons or Surgeons-Major of Infantry Regiments shall not in future be subject to any diminution of the allowance of forage, according to the regulations in force, nor to any stoppage out of their daily pay for any ration of hay, straw, or oats, supplied for the horse or horses kept by them for the public service.

22. All Staff Surgeons of the first class and Senior Surgeons of Artillery now serving, or who, being now on Half-Pay, shall hereafter be called upon to serve, shall rank as Surgeons-Major from the date of their Commissions as Staff-Surgeons of the first class, or Senior Surgeons of Artillery, and shall receive the pay of Surgeon-Major, according to the foregoing schedule of Full-Pay from the date of this Warrant, or from the date of being called from Half-Pay to Full-Pay; and all Surgeons who have already completed twenty years' Full-Pay service, or upwards, in any rank, shall have the rank and pay of Surgeons-Major from the date of this Warrant.

23. Medical Officers shall be held entitled to the same honours as other Officers of Our Army of equal relative rank.*

24. A Medical Officer, retiring after a Full-Pay service of twenty-five years and upwards, may, if recommended for the same by the Head of his Department, receive a step of honorary rank, but without any consequent increase of Half-Pay.

25. Good Service Pensions shall be awarded to the most meritorious Medical Officers of Our Army under such regulations as shall be from time to time determined by Us, with the advice of Our Secretary of State for War.

26. Six of the most meritorious Medical Officers of the Army shall be named My Honorary Physicians, and six, My Honorary Surgeons.

Given at Our Court of St. James's, this first day of October, 1858, in the Twenty-second year of Our Reign.

By Her Majesty's Command,
(Signed) J. PEEL.

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* This clause does not extend to the compliments to be paid by Garrison or Regimental Guards as laid down in pages 29 and 30 of the Queen's Regulations for the Army.

Sir, 5th January, 1859.

I have the honour to transmit the accompanying Circular from the War Office, dated 12th October, 1857, promulgating a new arrangement for carrying on the financial and executive duties of that department abroad; and in directing your attention thereto, I have to request that you will forward all representations you may have to make on subjects not strictly departmental, through the General Officer Commanding, as his opinion will greatly assist the Secretary of State for War in arriving at a just decision on such matters.

(Signed) T. Alexander, *Director-General.*

The Principal Medical Officer, &c.

Sir, 19th October, 1857.

The Secretary of State for War having determined that the Boards of respective Officers should be abolished, and that the cash business of the several branches of the War Department, at Foreign Stations, should be concentrated, it becomes necessary to make new provisions for carrying on the financial and executive duties of the War Department abroad. Moreover, his Lordship thinks it desirable that a more complete local supervision should be maintained over the several branches of the department at Foreign Stations than has heretofore been possible. With these views, he has instructed me to forward to you the inclosed documents for your information and guidance, and further, to direct that the following regulations be observed; viz:—

1st. You will henceforth consider yourself generally responsible to the Secretary of State for the due performance of the duties of all the Military Departments within your command, including those of the

Commanding Officer of Artillery,
Commanding Royal Engineer,
Military Storekeeper,
Barrack-Master,
Commissariat Officer,
Principal Medical Officer, and
Purveyor.

2nd. Nothing contained herein is to interfere with the usual course of correspondence between you and the Commander-in-chief of the Army, with reference to the military discipline and service of the corps of Royal Artillery, Royal Engineers, and the Medical and Purveyor's Staff; the object of this Circular being strictly limited to those administrative duties upon which the instructions proceed direct from the War Office.

3rd. As a general rule, the local heads of these branch departments will continue to receive from their respective chiefs in the War Office, instructions for their guidance in accordance with the orders of the Secretary of State, and you will call upon them at such times as may be most convenient to you, to submit those orders for your information; but whenever the importance of the question renders it desirable, the instructions will be sent to you by the Secretary of State to be communicated by you to the Officers in question.

4th. Whenever you shall deem it necessary to communicate with the Secretary of State for War on a service connected with any branch of the department, you will call upon the head of that branch for his opinion in writing, which you will forward, together with your own recommendation upon the subject, for his Lordship's information.

5th. All estimates for works, repairs, and establishments, are in the first instance to be submitted to you by the several branches concerned with them for your information and approval, before they are forwarded for the decision of the Secretary of State for War.

6th. You will from time to time, when practicable, inspect the various branch departments to such extent as will satisfy you that they are efficiently conducted; and you will transmit direct to the Secretary of State a report of your proceedings and observations, in time to reach this Office by the 1st November in each year.

7th. Annexed are certain special directions and heads of inquiry which relate to particular branches, and upon which information is desirable; but the Secretary of State will be glad to receive any observations on other points which you may think proper to notice.

8th. In the event of its being necessary to provide specially for carrying on the business in any branch department from the death or absence of any of its officers, or from any other cause, the head of the branch concerned will represent the same to you, and act upon your authority in the matter, pending the receipt of instructions from this Office. Should a branch department require at any time additional temporary assistance, you will, should you think fit, direct such assistance to be procured, and report the same to the Secretary of State. All proposals for increase of the pay of temporary clerks and other subordinates in the several branches, are to be submitted for such observations as you may have to make upon them, before they are sent Home for the decision of the Secretary of State.

9th. If there be any sub-stations in your command at which establishments belonging to the War Department are kept up, you will delegate such of the powers and duties herein referred to with respect to them as you cannot conveniently exercise yourself, to the officers commanding at such sub-stations respectively, and you will instruct them as you may think fit, with reference to their communicating with this Office directly, or through your own head-quarters.

10th. You are requested to give the necessary orders that the new system may come into operation from the commencement of the quarter succeeding the receipt of this Circular at your station, if sufficient interval occur for completing the arrangements, or otherwise, from the commencement of the subsequent quarter. You will be pleased to report the date determined on.

(Signed) J. R. GODLEY.

The General or other Officer Commanding
the Forces at, &c.

SPECIAL DIRECTIONS AND HEADS OF INQUIRY REFERRED TO IN THE ANNEXED CIRCULAR.

Artillery Branch.

Are the ordnance, carriages, and traversing platforms mounted on the several defences, kept in serviceable condition and working order, and with their proportions of side arms and small stores under proper military protection?

Are the proportions of made-up ammunition allotted for immediate service of the mounted ordnance sufficient, and are the expense magazines in proper condition, and under adequate military protection?

Are the service field guns, with their carriages, ammunition, and equipments, in efficient condition, and under suitable cover and protection?

Engineer Branch.

Is the establishment of clerks, artificers, and labourers sufficient, and not more than sufficient, for the performance of the duties?

Have the works and repairs been carried out in accordance with the plans and estimates approved by the Secretary of State for War for the financial year.

Have the barrack repairs been executed with promptitude?

Do correct plans exist of the fortifications, barracks, and other military buildings, and are they in good preservation?

Is the property of the War Department well looked after, are encroachments resisted, and are those portions of land not immediately required for the public service let to the best advantage?

Military Store Branch.

Is the establishment sufficient, and not more than sufficient, for the performance of the duties?

Is the supply of military stores on hand in your opinion sufficient, and not more than sufficient, for the requirements of the station.

Are the storehouses, magazines, and buildings attached to the Store Branch, in your opinion equal to, or beyond the requirements of the service, and are they maintained in good repair?

Are the duties of the Store Branch properly and promptly executed, in meeting the requisitions made upon it by the other branches of the service?

With a view to ascertaining the state and number of the stores in charge of the Military Storekeeper, you will each year, or oftener if required, appoint a properly qualified officer for the purpose of effecting a survey of the stores in charge of the Military Storekeeper, who will certify as to the general condition of the stores, the way in which they are kept, and whether any portion of them is obsolete or unfit for service from any cause; and he will also certify to the general correctness of the numbers in charge, by selecting such articles as he may think proper, and causing them to be counted, so that from these examples an approximate opinion may be formed as to the state of the general store.

Once in every five years you will cause a complete remain or taking of stock to be effected, and appoint a properly qualified officer to perform that duty.

Your order will be required for all issues of stores not previously sanctioned by authority from this office, and you will, without delay, report such order to the Secretary of State, explaining, at the same time, your reasons for granting it.

The annual certificate for increase of pay for the head of the Store Branch in your command will, in future, be submitted to you for approval or otherwise, as you may think fit.

Barrack Branch.

Are the barrack inspections made with regularity, and are the orders relative to barrack damages chargeable to the troops strictly carried out?

Are the issues of bedding and stores made with regularity, and with due regard to the convenience of the troops?

Do the several Barrack-Masters, in carrying on the duties of their departments, co-operate cordially with the military authorities?

Commissariat Branch.

Is the establishment sufficient, and not more than sufficient, for the performance of the duties?

Are the financial duties of the Controller and Accountant efficiently performed?

Are the troops well and regularly supplied with their rations of provisions, forage, fuel, and light?

Is the necessary transport furnished for all authorized services?

Are the contracts entered into for the various supplies and services of the department efficiently and economically managed?

Should you deem it necessary to order the issue from the Commissariat Stores of any extra rations of provisions, forage, or fuel and light, or pecuniary allowance in lieu, over and above the allowance granted by the Royal Warrant, or sanctioned by the local regulation of the command, you will report the same, without delay, for the approval of the Secretary of State, explaining your reasons for granting it.

Purveyor's Branch.

Is the establishment sufficient, and not more than sufficient, for the performance of the duties?

Are the supplies furnished with due regularity to the hospitals; and are they uniformly of good quality, and suitable for the use of the sick?

Are the diet rolls, and other documents required by the Purveyor from the Surgeons, punctually rendered to him, and do the Paymasters of regiments receive the stoppage returns with regularity from the Purveyor?

31st March, 1859.

The attention of the Medical Officers of the Army is requested to the absolute necessity which exists for their registering their names under the new "Act to regulate the Qualifications of Practitioners in Medicine and Surgery," otherwise, by the 36th Section of the said Act, they become disqualified for Army Medical Officers; and the Registrar has informed me, that "after the 1st of July next (as the date will stand in the amended Act) no unregistered Army Surgeon will be able to sign a valid certificate or to give evidence in a court of justice, or even to draw his pay, and by Section 40 he will be liable at any time to be sued for penalties."

Clause 15 of the above Act further states—

"Every person now possessed, and (subject to the provisions hereinafter contained) every person hereafter becoming possessed, of any one or more of the qualifications described in the Schedule (A) to this Act, shall, on payment of a fee, not exceeding two pounds in respect of qualifications obtained before the first day of January, one thousand eight hundred and fifty-nine, and not exceeding five pounds in respect of qualifications obtained on or after that day, be entitled to be registered on producing to the Registrar of the Branch Council for England, Scotland, or Ireland, the document conferring or evidencing the qualification or each of the qualifications in respect whereof he seeks to be so registered, or upon transmitting by post to such Registrar information of his name and address, and evidence of the qualification or qualifications in respect whereof he seeks to be registered, and of the time or times at which the same was or were respectively obtained."

The name and address of the Registrar is "Dr. F. Hawkins, Medical Registration Office, 32, Soho-square, London, W.," and the fee is 2*l.*

(Signed) T. ALEXANDER, *Director-General.*

Sir, 9th May, 1859.

I have the honour to transmit a copy of queries drawn up by the "Sub-Committee of the National Association for the promotion of Social Science;" and in soliciting your early replies, I request that you will have the goodness to detail the same with as much care and exactitude as possible.

(Signed) T. ALEXANDER, *Director-General.*

The Principal Medical Officer, &c.

The Secretary of State for War having approved of the adoption of a new system of hospital records, with the view of securing more accurate information relative to the sickness, mortality, &c., of the army, I have the honour to request you will be good enough, during the period you are in medical charge of a detachment of the , to furnish to the surgeon of that the particulars stated in the certificate book which accompanies this, regarding every man who may require your professional assistance.

You will be pleased to transmit each certificate as soon as possible after the termination of the case, and on the withdrawal of the detachment from your charge you will at the same time return the book to the head-quarters of the corps for future similar use.

(Signed) T. Alexander, *Director-General.*

Sir, 10th May, 1859.

With reference to the adoption of the new system of hospital records, I have the honour to inclose for your use, when necessary, a memorandum for the guidance of private practitioners who may be placed in charge of parties of your corps.

On a detachment leaving the head-quarters for a station where it will be placed in charge of a private practitioner, it will be your duty to forward therewith a copy of the inclosure, together with a medical certificate book, and you will take care that on the return of the detachment to head-quarters the book is duly sent back to you. The cases which are thus reported to you should be entered in the usual way in your admission book, adding a note that the men were under the care of a practitioner at the time, and specifying the station; the requisite entry must also be made in the medical histories sheets of the respective men.

Such further supplies of the memorandum, and any additional certificate books you may require, can be obtained, in the usual way, from the War Office.

(Signed) T. Alexander, *Director-General.*

The Surgeon, &c.

Sir, 18th May, 1859.

I have the honour to forward, for your information and guidance, the following extract from a letter addressed to me by order of the Secretary of State for War on the 10th instant :—

"That in all hospitals to which no governor is appointed, the purveyor be placed, by his instructions, distinctly under the Principal Medical Officer of the hospital, whose orders he shall always obey; but in case of apparent extravagance, either in quantity or quality, the purveyor shall report to the Purveyor-in-chief, after obeying the requisition, in order that the case may be brought under the cognizance of the Director-General.

"The orders received from the Principal Medical Officer by the purveyor shall only apply to the requirements of the sick, and the purveyor is to have a right to require the order, when it involves expense, to be given in writing."

(Signed) T. Alexander, *Director-General.*

The Principal Medical Officer, &c.

Scale of Payment of Civil Surgeons attending Troops on Board Ship.

War Office, 24th May, 1859.

The following Regulation for the payment of Civil Surgeons attending troops on board ship, is established instead of that dated the 30th June, 1856 :—

A Civil Surgeon attending troops on board ship will be allowed the following rates of head-money, without reference to the actual duration of the voyage :—

Between this country and Gibraltar. 4*s.* for each man or woman.

Between this country and Malta, Corfu, or North America, 6*s.* for each man or woman

Between this country and Cape of Good Hope, St Helena or Mauritius, 7*s.* 6*d.* for each man or woman.

Between this country and West Coast of Africa or West Indies, including Jamaica, Bermuda, Honduras and Bahamas, 8*s.* for each man or woman.

Between this country and Ceylon, China or East Indies, 12*s.* for each man or woman.

Between this country and Australia, New Zealand or Falkland Islands, 12*s.* for each man or woman.

Half the above rates will be allowed for each child between two and fourteen years of age.

When the vessel is a steamer, only two-thirds of the above rates will be allowed.

The Civil Surgeon will not be provided at the public expense with a passage back to the station from which he embarked, nor messed at the public expense.

The above Regulations do not apply to Surgeons belonging to vessels, or engaged by the owners of vessels or their agents, as their services will be remunerated by the Admiralty, if not already provided for in the terms under which the troops are conveyed.

(Signed) B. HAWES.

Sir, 26th July, 1859.

I have the honour to request you will be pleased, at your earliest convenience, to arrange and transmit to this office, a special topographical report of the stations, barracks, and hospitals under your superintendence, the site and aspect of each building, the size of the rooms, for what number of men constructed, modes of ventilating, sewerage, and drainage, and every other circumstance that, in your opinion, may influence the fitness, or otherwise, of the several buildings for the purposes to which they are appropriated; together with a full description of latrines, bath-rooms, cook-houses, &c. Drawings of the different barracks and hospitals will be most acceptable, especially as regards the interior arrangements.

You will be pleased to be as particular as possible in describing the effects of any local influences on the constitution of the European soldier.

(Signed) T. ALEXANDER, *Director-General.*

The Principal Medical Officer, &c.

30th July, 1859.

Many soldiers of short service, who did not bear marks of medical treatment, having been sent to Chatham to be discharged, the Director-General begs to call the attention of medical officers to this subject, and to inform them that every soldier, before being brought forward for discharge on account of a medical disability, must bear marks of the treatment usually adopted in practice, to show that proper remedial means have been used to restore him to health before he is pronounced unfit for further service.

Soldiers are often invalided for lumbago, epilepsy, diseases of the joints, and visceral affections, all of which, in the early stages, would be much benefited by local depletion, and it is to such cases that the attention of medical officers is specially directed, and not to those of advanced organic disease or of permanent deformity.

The Director-General recommends, where topical depletion is considered necessary, that cupping be resorted to, as it is a mode of treatment oftentimes more efficacious and always less expensive than the application of leeches.

(Signed) T. ALEXANDER, *Director-General.*

Sir, 15th August, 1859.

I have the honour to request you will be good enough to make such arrangements as will insure that all recruits enlisted at * be examined by a surgeon or surgeon-major, and you will be pleased to direct that the several assistant-surgeons doing duty at that station be, by rotation, present at all examinations of recruits, in order that they may be properly instructed in this important duty.

(Signed) T. Alexander, *Director-General.*

The Principal Medical Officer, &c.

Sir, 22nd August, 1859.

Adverting to the large number of orderlies who have occasionally been employed on board ships conveying invalids from abroad, I have the honour to inform you that the Secretary of State for War has directed that for the future the medical officer in charge shall furnish, weekly, a certificate to the officer commanding the troops, specifying the number of men on the sick list each day of the week; these certificates must be appended (after having been countersigned by the commanding officer) as vouchers to any charge that may be made for orderlies, and which must not exceed one to every ten sick men (unless under very special circumstances, which must be fully detailed and reported); I have, therefore, to request you will be pleased to issue the necessary instructions on the subject to every medical officer embarking for England or elsewhere in charge of invalids, and I beg to suggest that you will so distribute the men as to avoid, as far as possible, sending home many serious cases in one ship.

(Signed) T. G. Logan, *Inspector-General,*
for the Director-General.

The Principal Medical Officer, &c.

Sir, 18th October, 1859.

His Royal Highness the General Commanding-in-chief having directed that such instructions may be issued to the medical officers of the army as will inculcate their cheerful co-operation with the wishes of commanding officers, and insure a proper sense of subordination (which I regret to state has been lost sight of in some occurrences that have been recently brought to the notice of His Royal Highness by the General Commanding-in-chief in India), I have the honour to request that you will be pleased to convey to the medical officers serving at the station under your superintendence my hopes that every member of the department will not only be ready to obey the orders of, but will also yield a most cheerful response to the wishes of his commanding officer on all occasions, ever bearing in mind that the responsibility of a commanding officer embraces the welfare of the sick as well as that of the effective soldier of his battalion.

I further have to request, that whenever medical officers in charge of troops may think it necessary to make suggestions of a sanitary or other nature, they will do so to their immediate commanding officer, sending a copy of such suggestions to the Principal Medical Officer of the station for my information, agreeably to the instructions laid down in the Hospital Regulations.

(Signed) T. Alexander, *Director-General.*

The Principal Medical Officer, &c.

Sir, 31st October, 1859.

As it is intended that, in future, the period comprised in the Annual Medical Return shall be from 1st January to 31st December, instead of from

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* Aldershot, Woolwich, Devonport, Shorncliffe, Colchester, Chatham, Channel Islands Ireland.

1st April to 31st March, as at present, you will be good enough to make your next Report at the close of the current year, and to include in it a period of nine months only instead of twelve. In the Annual Return the sick of all detachments, and the deaths both in and out of hospital, must be included, as one of the objects of such Return is to show correctly the sickness and mortality of the whole regiment. To enable you to do so, you will make arrangements with the Medical Officers in charge of detachments to furnish you with the information requisite to complete the Return.

(Signed) T. ALEXANDER, *Director-General.*

The Surgeon, &c.

Sir, 10th December, 1859.

I have the honour to inform you that, in compliance with the instructions of the Secretary of State for War, weekly sick returns will in future be required from all troops serving in the United Kingdom in lieu of the present monthly returns.

With a view, however, to complete the existing series, you will be pleased to continue to forward the monthly return till the end of the current year, when it will no longer be required, but the vaccination return is to be furnished monthly, as at present.

Forms for the weekly sick return will be forwarded to you, and are to be taken into immediate use. The returns are to be made up to the Friday night, and are to be posted as early thereafter as possible, so as to reach this office on Monday morning. In garrisons and camps where there is a Principal Medical Officer, they are to be sent to him for transmission; in all other cases they are to be forwarded, in the usual manner, direct to this office.

It must be obvious that under this arrangement the sick of detachments, unless in the immediate vicinity, cannot be included as at present in the head-quarters return, but must be reported direct to this office. For the same reason detached batteries of artillery will forward their weekly returns direct. In the Artillery returns all the men of that branch of the service who have been treated in hospital are to be included though they may belong to other brigades, but care must be taken that they are also included in the strength.

(Signed) T. ALEXANDER, *Director-General.*

The Surgeon, &c.

10th December, 1859.

The Director-General begs to make known to the Medical Officers of the Army, that it is intended to publish annually Reports of cases of disease or of injury, and Papers upon any scientific subject that may be thought useful to the service, or interesting to the profession; Medical Officers are therefore invited to forward such Reports or Papers with their Annual Returns, in order that a selection may be made for publication.

16th December, 1859.

The Medical Officer in charge of the depôt battalion at is requested to insert in each Weekly Return, in the space left for " Remarks," a statement showing the strength of each of the depôts composing the battalion.

To the Medical Officers in charge Depôt Battalions.

EXAMINATION PAPERS, 1860.

Competitive Examination for Admission into the Army Medical Service.

In determining the relative merits of the candidates, so far as they can be ascertained from answers to printed questions, regard will be had both to the number of questions answered, and to the accuracy and completeness of each answer. But it is not expected that all the questions will be fully answered by every candidate. For they are not only intended for ascertaining whether each candidate is qualified for an appointment, but for testing, by both their number and their difficulty, the relative abilities of the best candidates,—a design which is essential to a competitive examination, and which cannot be fulfilled unless some questions are asked to which only the best candidates can give good and complete answers.

Competitive Examination, held at 6, Whitehall Yard, in January 1860, for Commissions in the Army Medical Service.

NATURAL HISTORY, &c.—Dr. HOOKER.—Monday, January 9, 1860.

Select five or more of the following questions, and answer them as fully as you can.

1. What are the principal fixed and essential vegetable oils? and from what parts of what plants are they procured?
2. Enumerate the principal roots and grains from which alcoholic drinks are distilled in various parts of the world.
3. Enumerate the chief unhealthy stations of the British army, and give some account of their several climates as regards temperature and humidity.
4. What are the principal disinfectants, and how are they prepared? and which are most generally accessible?
5. What is the composition of the common gas used for lighting? what are the products of its combustion, and their qualities?
6. Enumerate the entozoa which inhabit man; give their proper names, the organs they infest; and state what you know of their habits, origin, and development.
7. Give the names, natural orders, and native countries of the drastic purgatives in common use.
8. What are the principal floral organs, and what their relative arrangement?
9. Distinguish the kinds of æstivation of the calyx and corolla, and give examples of plants in which they occur.
10. What are the characters of the natural order Cruciferæ, and of its tribes.
11. Enumerate the bones in the hind legs of the horse; and give their homologues in man.
12. Describe the dental system in rodentia, carnivora, and ruminantia.

13. Describe the construction of a galvanic pile, and explain its action.

14. Define tersely and accurately the terms ardent, irritant, errhine, tough, elastic, dense, linear, plane, ovate, ovoid, polyhedral, polygonal; and add their derivations.

15. In what forms and conditions do mercury, antimony, and potash occur in nature?

SURGERY.—Mr. PAGET.—Monday, January 9, 1860.

1. Describe and compare the principal effects of acute inflammation in mucous, serous, and synovial membranes, taking for instances the conjunctiva, tunica vaginalis, and synovial membrane of the knee.

2. Make lists of the instruments and materials for first dressings, that you would require for an amputation above the knee, tracheotomy, and ligature of the subclavian artery.

3. What are the injuries of which the symptoms most resemble those of fracture of the neck of the femur within the capsule of the joint? and how may they severally be distinguished from it?

4. Describe "union by the first intention," and state the best means of promoting it.

5. What are the diseases of which the symptoms are most like those of calculus in the urinary bladder? By what signs, besides those obtained by sounding, may they severally be distinguished?

6. Write diet-tables such as you may have seen in any hospital, distinguishing "Full Diet," "Half or Middle Diet," "Low Diet."

7. Describe the chief forms of curvature of the spine, and the morbid conditions of the bones and other structures on which they severally depend.

8. A lad, 15 years old, was admitted into hospital with a swelling in his fore arm. He said that, sixteen days before admission, he wounded himself in the fore-arm with a sharp-pointed knife; that a little blood flowed from the wound; that the flow stopped of itself; and that then he bound up the wound, and it soon healed. His arm, however, he added, felt stiff after the wound; so he kept it quiet; and nothing appeared wrong till eight days after the injury, when the parts at and about the wound began to swell; and they continued to swell till he came to the hospital.

The scar of the wound was about a quarter of an inch long, and very nearly right over the course of the ulnar vessels in the middle of the fore-arm. Below the scar, and extending nearly to the bend of the elbow, was a smooth, firm, oval swelling, somewhat painful on pressure. The swelling felt as if bound down by the fascia; no pulsation could be felt in it; but, with the ear resting over it, a prolonged blowing sound was heard, synchronous with the pulse at the wrist. All the parts over and about the swelling appeared healthy. The pulse was distinct, and of due time and force, in both the radial and ulnar arteries below the swelling.

What was this case? and what was the proper treatment of it?

ANATOMY AND PHYSIOLOGY.—Mr. BUSK.—Tuesday, January 10, 1860.

1. Describe the origin and course of the *profunda cervicis* artery, and the dissection required to display it on the posterior aspect of the vertebræ; mentioning all the parts exposed in the dissection.

2. Describe the diaphragm, its connexions, relations, and action.

3. Describe the muscles of the tongue.

4. Classify the various kinds of articulation, giving an instance of, and describing the motions peculiar to, each kind.

5. Mention the properties by which living bodies and tissues are distinguished from dead.

6. Describe the process of coagulation of the blood, noticing the principal explanations of it that have been offered, and the conditions by which it is hastened, retarded, or prevented, within or without the body.

7. Describe the nature and causes of the various sounds attending the heart's action.

8. Describe the structure of the human ovary and ovum; and contrast the latter with that of a bird.

MEDICINE.—Dr. PARKES.—Tuesday, January 10, 1860.

1. What do you mean by malaria? and what are its presumed sources? Give a short account of the principal diseases usually ascribed to it.

2. Describe fully a case of small pox in all its stages and complications. Give the treatment of a confluent case in an adult.

3 What are the causes of pericarditis?

4. What are the causes of perforation occurring in the alimentary canal at any point from the cardiac orifice to the anus? How would you treat a case of peritonitis from perforating ulcer of the stomach?

5. Describe the microscopic characters of the following urinary sediments: ammoniaco-magnesian phosphate, uric acid, cystine, granular and hyaline casts, renal epithelium, and blood.

6. How would you diagnose the following diseases—ovarian dropsy, fibrous tumour of the uterus, large malignant tumour of the uterus?

7. Mention the pharmacopœial preparations of lead. For what is lead chiefly used internally in medicine? By what methods, and through what channels, is lead eliminated from the body?

8. What are the characters of good drinking water; and what are the usual impurities in the shallow wells of a large town?

Competitive Examination, held at Chelsea Hospital, in August, 1860, for Admission of Candidates into the Army Medical Service.

ANATOMY AND PHYSIOLOGY.—Mr. BUSK.—Monday, August 13.

1. Describe the general characters of the ribs, and the peculiarities by which certain ribs are distinguished. Enumerate the muscles engaged in their elevation and depression.

2. Give a description of the cœcum and the ilio colic valve; and state the difference in point of structure between the large and small intestines.

3. Describe, in the order in which they occur, the parts brought into view in exposing the anterior surface of the anterior scalenus muscle.

4. Describe the several parts brought into view in dissecting and removing the short muscles of the thumb and abductor indicis.

5. Give the physical and chemical characters of yellow elastic tissue, and notice the principal situations in which it exist in the human body.

6. Mention the circumstances which increase or diminish the amount of carbonic acid exhaled by animals.

SURGERY.—Mr. PAGET.—Monday, August 13, 1860.

1. Enumerate not less than five kinds of wounds which you would *not* attempt to heal by the first intention; and state how you would treat each of them.

2. Describe the most frequent appearances, after death, of enlargement of the middle lobe of the prostate gland; and the symptoms by which that condition may be known, or suspected, during life.

3. Describe fully the proper treatment of a perineum recently and completely ruptured during parturition.

4. What are the conditions on which secondary hæmorrhages after amputation depend, and what are the best modes of treating them?

5. Write Latin prescriptions for the following medicines for hospital use, namely—colocynth and calomel pills; jalap and calomel pills; compound senna draught; zinc lotion; hydrochloric acid gargle.

6. Describe the several forms of hydrocele connected with the testicle and spermatic cord, including those that occur in infancy, and mentioning particularly the characters of the fluids contained in them.

7. Describe the usual symptoms and progress of an ordinary case of cancer of the rectum. Under what circumstances, in the course of such a case, would you think it proper to open the colon?

NATURAL HISTORY, &c.—Dr. HOOKER.—Tuesday, August 14.

Answer five or more of the following questions:—

1. What is meant by the respiration of plants, and how is it effected?

2. Give the botanical characters of the natural orders, labiatæ, valrianeæ, solaneæ; and mention the medicinal plants they contain.

3. Contrast the reproductive systems in phanerogamous and cryptogamous plants.

4. By what characters are the orders of dicotyledons grouped into four divisions, and of monocotyledons into three?

5. What are the kinds of aloes used in medicine, how are they distinguished, and where do they come from?

6. To what constituents are the nutritious properties of wheaten bread due? Give their chemical composition, and explain the changes they respectively undergo during the operation of mastication and digestion.

7. Describe the nature and products of acetous and vinous fermentations.

8. Give the dental formula and peculiarities of the alimentary canal in ruminants.

9. Describe the structure and mode of development of a bird's feather.

10. Indicate the parts of the alimentary canal in which the different intestinal entozoa are chiefly met with.

11. Give the chemical composition of sea water, and contrast hard and soft waters.

12. Define tersely the terms—etiolate, diluent, demulcent, viscid, plastic, elastic, dense, transparent, and translucent.

MEDICINE.—Dr. PARKES.—Tuesday, August 14.

1. What are the causes of anasarca? How is the effusion produced in each case, and how would you treat the principal forms?

2. Describe the appearances seen after death in the abdomen in the following diseases:—typhoid fever—phthisis, with intestinal complications—dysentery.

3. What are the physical signs of the following diseases?—1. Pleurisy

on the right side, with great effusion. 2. Obsolete pleurisy on the left side, with great contraction. 3. Cancer, commencing in the mediastinum, and infiltrating the whole of the upper lobe of the right lung. 4. Extensive tuberculosis and cavities throughout the left lung. 5. Great enlargement of the bronchial glands in a child.

4. Describe the symptoms produced by the passage of a renal calculus. What is the composition of the principal calculi? How would you treat a case of presumed calculous pyelitis?

5. What are the chief diseases to be watched for in the first week after delivery? Give their symptoms and treatment.

6. What are the preparations of mercury in the pharmacopeia? How would you test for mercury in a complex fluid? What are the chief symptoms and the measures to be adopted in chronic poisoning from mercury?

Examination of Assistant-Surgeons previous to promotion to the rank of Surgeon.

Army Medical Department, 10th July, 1860.

A.

Medicine, &c.—Dr. Parkes.

1. What part do you assign to temperature amongst the causes of disease? What are the chief diseases usually ascribed to (*a*) excessive heat, (*b*) extreme cold, (*c*) great and sudden changes from heat to cold, and the reverse? How would you treat those several diseases?

2. State what opinions your observations have led you to form with respect to the effects of diet on the health of soldiers. Discuss particularly the questions of the influence of alcohol when taken in large and in moderate quantities.

3. What are the chief diseases of the heart you have had to treat since you entered the army? What were the symptoms of those diseases; how did you treat them; and what was the result? Enter minutely into the causes of those diseases in the men under your care. What share had the military duties in their production? State precisely any means of prevention that you could recommend.

4. Describe concisely the symptoms, post-mortem appearances, causes, treatment, and complications of dysentery.

5. What do writers mean by the term "typhus of armies?" Discuss fully the questions of diagnosis and etiology connected with this term.

6. An attack of cholera occurs in a large town close to the barracks where you are stationed. The Commanding Officer requests you to frame such precautionary measures as can be adopted without quitting the barracks. What would be your list of recommendations?

7. You are applied to by the Engineer Department to state how much water will be required for an hospital of 500 men; it being understood that the supply will be sufficient for cooking, washing, bathing, and cleansing sewers. At the same time, a bottle of water is submitted for your opinion as to its quality. What would you reply to the first question, and how would you judge of the second point?

8. You are required to organize a field hospital for 300 men; tents only are allowed, but these you can have in any number; no sewers can be made: How would you arrange, ventilate, and furnish the tents? How would you organize your kitchen and dispensary? And what would be your arrangements for the removal of excrementitious matters?

B.

SURGERY.—MR. PAGET.

1. Describe the operation of resection of the elbow-joint; and briefly the chief cases of injury and disease for which it is appropriate.

2. What regulations have you seen enforced for the prevention or diminution of venereal disease among soldiers? If they have been unsatisfactory, how would you improve them?

3. What are the most frequent complications that arise during an acute gonorrhœa? Name not less than five: describe them, and state the best means for their prevention and cure.

4. For what injuries in the lower extremity, produced by musket-balls, and for what consequences of such injuries, would you amputate, supposing the patients to have been previously healthy soldiers?

5. In cases of punctured wounds of limbs, from which blood is no longer flowing, what would lead you to believe that a principal artery is wounded? In such belief, what would you do?

6. Write the articles, and quantities of each, contained in the "low diet," "half diet," and "entire diet," of the Hospital Regulations.

7. State the best means for detecting the deceptions of those who pretend blindness either of one or both eyes, or deafness of one or both ears, or stiffness of a joint (say the elbow), or paralysis of an arm or leg.

8. A man is found insensible; how would you ascertain whether the insensibility be due to injury of the head, drunkenness, apoplexy, poisoning with opium, or exhaustion through want of food?

9. Describe the characters and tests of the following deposits in urine: lithic acid, triple phosphate, oxalate of lime, mucus, pus.

C.

ANATOMY, PHYSIOLOGY, AND NATURAL SCIENCES.—MR. BUSK and DR. HOOKER.

1. Describe in their proper order, as displayed in dissection, the parts situated on the anterior aspect of the forearm, including the bend of the elbow.

2. Describe the parts concerned in the femoral hernia, and the anatomical conditions distinctive of that form of rupture.

3. Describe the minute anatomy and the functions of the kidney, noticing the sources whence the principal elements contained in its secretion are derived.

4. Describe the membranous portion of the male urethra, its form, relations, and structure.

5. From what parts of what kinds of plants is quinine procured? Describe, in general terms, the method of extracting the alkaloid; mention the plants that afford the best substitutes for quinine.

6. Enumerate the principal entozoa which infest the human subject, and state what you know of their habits.

7. Which is most nutritious: rice-flour, or pea-flour? Upon what do their relative qualities as articles of diet depend?

8. Enumerate the principal animal and vegetable oils; state the sources whence they proceed; and distinguish the volatile, fixed, and irritant.

Army Medical Department, August, 1860.

A.

MEDICINE, &c.—Dr. PARKES.

1. Much discussion has taken place with regard to the etiology of yellow fever, and its exact relation to diseases of undoubted malarious origin. Describe the symptoms and treatment of yellow fever, and enter as fully as you can into the questions above alluded to.

2. What are the pulmonary diseases you have had to treat since your entrance into the service? Give their symptoms and treatment, and state any opinions you have formed from your own experience, with respect to their causes, and the preventive measures which should be adopted.

3. What opinions are now generally received respecting the causes of scurvy? How does the scorbutic taint modify the symptoms of the following diseases:—typhus, pneumonia, pleurisy, and dysentery?

4. What are the symptoms and causes of beri-beri?

5. What are the chief measures used for purifying water from suspended and dissolved organic substances? What diseases have been supposed to be produced or aggravated by the use of such impure water?

6. What is the ordinary diet of the soldier on home service? Your opinion being asked as to the kind and quantity of food which should be supplied in a campaign in Europe, expected to be extremely harrassing and laborious, draw up such a scale of diet as will in your opinion meet the case.

B.

SURGERY.—Mr. PAGET.

1. Write such regulations for the general treatment of men nearly drowned as may be carried out by non-professional persons.

2. Describe briefly the characters and the appropriate treatment of burns of different degrees of severity.

3. Enumerate the contagious diseases of the skin (excluding the exanthematic); describe the distinctive characters and treatment of each. How would you try to prevent their spreading in a regiment?

4. Write lists of all that should be prepared for the performance of, and first dressings after, the operations, (1) amputation above the knee; (2) tracheotomy; (3) trephining.

5. What precautions do you observe in the administration of chloroform? In case of any untoward symptoms arising during its administration, what should be done?

6. What are the most frequent conditions of the bones, and the parts around them, in old cases of ununited fracture?

7. What are the principal injuries and diseases of the head for which the removal of bone, by trephining or otherwise, should be generally advised.

C.

ANATOMY, PHYSIOLOGY, AND NATURAL SCIENCES.—Mr. BUSK and Dr. HOOKER,

1. Describe the diaphragm, its connexions, relations and function.

2. Describe the fasciæ of the abdomen, together with those of the pelvis and perineum in the male.

3. Give an account of the structure and properties, physical and vital, of a middle-sized artery, and of the capillary vessels.

4. What are the conditions upon which the rhythmical movements of the heart depend, and to what causes are its sounds due?

5. What are the chief active principles in opium? Describe in general terms the method of extracting them.

6. What are the wild British poisonous plants which give rise to the most frequent cases of accidental poisoning? What symptoms do they produce?

7. What is yeast? Give the rationale of its use in baking bread.

8. Enumerate the principal plants from which sugar is procured. Explain its use as an article of diet; and distinguish grape from cane sugar.

Army Medical Department, September, 1860.

A.

MEDICINE, &c.—DR. PARKES.

1. To what salts is the hardness of water owing, and what injurious effects are usually attributed to these salts?

2. Describe fully the effects produced by water holding lead in solution, and the mode in which the presence of lead is to be chemically proved.

3. What cubic amount of air is allowed by the regulations to each soldier in barracks and hospitals in Great Britain? What are the best means of ventilating barrack-rooms?

4. What diseases of the liver are most commonly recorded in the army returns? How are they recognized; what are their causes; and how may they be cured or prevented?

5. Describe a case of delirium tremens, and enter fully into the question of differential diagnosis.

6. What are the varieties of tape-worm, and in what countries are they most common? Enumerate the usual remedies.

B.

SURGERY.—MR. PAGET.

1. If hospital gangrene should appear among any number of wounded men under your charge, would you, or would you not, put those whom it affected in separate wards or tents? Give your reasons for the course you would adopt.

2. State some of the cases of secondary hæmorrhage in which it is not advisable to attempt to tie a wounded artery at the seat of the wound.

3. Describe any modifications in the characters or progress of venereal disease which you have observed in connection with varieties of climate, food, or any other circumstances affecting the general health of bodies of men, and what changes in the ordinary treatment of the diseases have appeared to you advantageous.

4. Describe the earliest symptoms of traumatic tetanus, and the general plan of treatment that you would adopt if the patient were a previously healthy man, and the wound trivial.

5. Describe the chief differences in the healing processes following gun-

shot wounds and incised wounds, and the general treatment of gun-shot wounds of soft parts.

6. Suppose a penknife driven half-an-inch into the front of a healthy man's eye, what treatment would you advise, and what consequences are most likely to ensue?

C.

Anatomy, Physiology, and Natural Science.—Mr. Busk and Dr. Hooker.

1. Describe the shoulder joint, enumerating, in their proper order, the muscles surrounding it, and noticing the mode in which the various movements of the joint are affected by them.

2. Describe the parts exposed on the entire removal of the pectoralis major muscle.

3. Describe the different regions into which the abdomen is divided, and enumerate the parts contained in each.

4. Describe the lachrymal apparatus.

5. Enumerate the five principal races of man; give their distinctive characters and native countries.

6. How are the several kinds of opium distinguished? What are the principal alkaloids contained in them, and which of these are most active as medicinal agents?

7. What are the products of the combustion of coal and of common gas

OFFICERS

OF THE

ARMY MEDICAL DEPARTMENT.

ARMY MEDICAL OFFICE.

Director-General	T. Alexander, C.B.	
Inspector-General	T. G. Logan, M.D.	*Sanitary Branch.*
Deputy Inspector-General	T. G. Balfour, M.D.	*Statistical Branch.*
Deputy Inspector-General	H. Mapleton, M.D.	*Medical Branch.*
Staff Surgeon	W. H. Fairbairn, M.D.	„ „
Staff Surgeon	H. F. Smith. M.D.	*Statistical Branch.*
Staff Surgeon	T. G. Fitzgerald	*Apothecary's Department.*
Dispenser	R. G. Sampson	

INSPECTORS-GENERAL OF HOSPITALS.

Name.	*Date of Appointment.*			*Station.*
W. Linton, M.D., C.B.	7	December	1858	East Indies.
J. Forrest, M.D., C.B.	31	„	„	Malta.
W. C. Humfrey	31	„	„	Dublin.
J. R. Taylor, C.B.	31	„	„	Chatham.
J. B. Gibson, M.D., C.B.	31	„	„	Aldershot.
T. G. Logan, M.D.	8	April	1859	London.
D. Dumbreck, M.D., C.B.	19	July	„	Cape of Good Hope.

DEPUTY INSPECTORS-GENERAL OF HOSPITALS.

C. Whyte	6	January	1854	Bombay.
T. Atkinson, M.D.	28	March	„	Ceylon.
R. Lawson	8	December	„	Jamaica.
T. D. Hume, M.D.	29	June	1855	Cork.
J. E. Williams	20	July	„	Madras.
S. M. Hadaway	25	January	1856	East Indies.
A. Gordon, M.D., C.B.	25	„	„	Dublin.
J. Mouat, *V.C.*, C.B.	7	December	1858	New South Wales.
T. R. Jameson, M.D.	31	„	„	West Indies.
A. Anderson, M.D.	31	„	„	East Indies.
J. C. G. Tice, M.D., C.B.	31	„	„	East Indies.
J. E. T. Parratt.	31	„	„	Woolwich.
J. D. McIllree	31	„	„	Nova Scotia.
G. S. Beatson	31	„	„	Corfu.
G. Taylor, M.D.	31	„	„	Canada.
J. Paynter	31	„	„	Gibraltar.
P. Gammie	31	„	„	
R. Dane, M.D.	31	„	„	Curragh.
C. Scott, M.D., C.B.	31	„	„	
A. Stewart	31	„	„	
F. W. Innes, M.D., C.B.	31	„	„	
J. Fraser, M.D., C.B.	31	„	„	Shorncliffe.
T. H. K. Innes, C.B.	31	„	„	
W. M. Muir, M.D.	31	„	„	China.
T. Longmore	31	„	„	Colchester.
S. Currie, M.D.	18	January	1859	Hong Kong.
G. Clerihew, M.D.	26	April	„	Mauritius.
R. J. O'Flaherty	19	July	„	Portsmouth.
T. G. Balfour, M.D.	22	„	„	London.
H. Mapleton, M.D.	26	August	„	London.

SURGEONS-MAJOR.

Name.	*Date of Appointment.*			*Station.*
J. Clark, M.D.	5	November	1852	Canada.
W. Odell, M.D.	3	March	1854	Canada.
G. G. Robertson, M.D.	28	,,	,,	York.
R. Smith.	28	,,	,,	Dublin.
J. S. Prendergast, M.D.	28	,,	,,	Chatham.
J. T. Telfer	28	,,	,,	China.
G. Carr	28	,,	,,	Bermuda.
H. Pilleau	7	June	,,	Belfast.
C. C. T. Delmege, M.D.	10	November	,,	Plymouth.
G. Anderson	8	December	,,	Edinburgh.
J. G. P. Moore	8	,,	,,	Cape of Good Hope.
W. Denny	12	January	1855	China.
J. G. Wood, M.D.	9	February	,,	West Indies.
W. L. Langley, M.D.	16	,,	,,	Liverpool.
E. J. Burton, M.D.	16	,,	,,	Cav. Depôt Canterbu
H. Hadley, M.D.	23	March	,,	Channel Islands.
F. Foaker	24	April	,,	Malta.
H. C. Reade	1	May	,,	West Indies.
C. Cowen	22	June	,,	Dublin.
W. Carson, M.D.	29	,,	,,	London.
E. W. Stone, M.D.	29	,,	,,	Glasgow.
W. Home, M.D.	29	,,	,,	Birr.
J. Mure, M.D.	6	July	,,	Winchester.
W. Sall, M.D.	20	,,	,,	West Australia.
J. McGregor	3	November	,,	Ceylon.
R. Templeton, M.D.	7	December	,,	Bristol.
J. Davies	8	January	1856	Great Yarmouth.
T. P. Matthew	31	August	1858	Chatham.
J. Maitland, M.D.	1	October	,,	Stirling.
A. T. Jackson, M.D.	1	,,	,,	Athlone.
G. Dolmage	1	,,	,,	Aldershot.
J. C. Cameron, M.D.	1	,,	,,	Walmer.
F. R. Waring	1	,,	,,	Ceylon.
R. K. Prendergast	1	,,	,,	Belfast.
J. Grant	1	,,	,,	Nova Scotia.
J. Stewart	1	,,	,,	Malta.
E. Mockler	1	,,	,,	Fermoy.
A. D. Taylor, M.D.	1	,,	,,	Fermoy.
J. A. Lawson, M.D.	1	,,	,,	Corfu.
H. Franklin	1	,,	,,	Chatham.
A. S. Thomson, M.D.	19	,,	,,	China.
J. Donald	23	August	1859	Mauritius.
D. D. McC. McDonald.	4	October	,,	Cork.

STAFF SURGEONS.

G. Williamson, M.D.	13	July	1847	Chatham.
J. S. Smith, M.D.	27	October	1848	New Zealand.
G. M. Webster, M.D.	1	December	,,	New South Wales.
J. A. Fraser, M.D.	22	,,	,,	East Indies.
S. McV. Lloyd, M.D.	22	,,	,,	Aberdeen.
[illegible] W. Mostyn, M.D.	16	March	1849	Cav. Depôt, Maidsto
[illegible] Summers, M.D.	28	August	,,	Cape of Good Hope
[illegible], M.D.	25	September	,,	Chatham.
[illegible] Dempster, M.D.	5	November	1850	
[illegible] Galbraith, M.D.	3	January	1851	China.
[illegible]	26	December	,,	Jamaica.
[illegible]	12	March	1852	Dublin.
[illegible] Fairbairn, M.D.	16	April	,,	London.
[illegible] Stewart	11	June	,,	East Indies.
[illegible] Rutherford, M.D.	11	June	,,	China.
[illegible], M.D.	16	July	,,	Ceylon.
[illegible]	3	December	,,	Pembroke.
[illegible], M.D.	4	February	1853	Canterbury.
[illegible], M.D.	11	March	,,	China.
[illegible]	26	July	,,	Hong Kong.

Name.	*Date of Appointment.*			*Station.*
G. F. Bone, M.D.	21	October	1853	East Indies.
T. Parr	21	„	„	East Indies.
R. Lewins, M.D.	3	March	1854	China.
W. W. Weld	3	„	„	Malta.
T. M. Sunter, M.B.	28	„	„	Honduras.
V. Webb	28	„	„	
A. Crocker	28	„	„	Chatham.
G. W. Powell	28	„	„	Chatham.
J. P. Moline	15	August	„	East Indies.
W. F. T. Ivey	15	„	„	Gibraltar.
H. Somers, M.D.	15	„	„	Chatham.
G. Saunders	20	October	„	Cape of Good Hope.
D. S. E. Bain, M.D.	3	November	„	West Indies.
O. S. Donnall	3	„	„	West Indies.
E. B. Tuson	10	„	„	Canada.
J. Dunlop, M.D.	8	December	„	Chatham.
H. F. Smith, M.D.	12	January	1855	London.
E. W. Bawtree, M.D.	19	„	„	Corfu.
W. Poole	9	February	„	East Indies.
V.C., A. D. Home	9	„	„	China.
D. Hanley, M.D.	16	„	„	Templemore.
R. Thornton	24	April	„	Jamaica.
H. S. Sanders	24	„	„	Gravesend.
P. H. E. Cross	15	May	„	Colchester.
J. Small	10	July	„	Mauritius.
C. W. Poulton	20	„	„	Mil. Prison, Gosport.
E. M. Macpherson	10	August	„	Cape of Good Hope.
W. R. Thompson, M.D.	14	September	„	
W. W. Somerville, M.D.	8	January	1856	Cork.
H. V. Bindon	25	May	„	
T. Ligertwood, M.B.	20	October	„	East Indies.
J. Hendley	5	December	„	Aberdeen.
C. H. Fasson	19	February	1857	Plymouth.
W. Lapsley	28	August	„	East Indies.
H. C. Martin	11	September	„	China.
B. Nicholson, M.D.	2	October	„	China.
G. K. Hardie, M.D.	2	„	„	East Indies.
H. H. Jones, M.D.	2	„	„	East Indies.
D. F. Rennie, M.D.	2	„	„	
J. Irvine, M.D.	2	„	„	London.
R. MacGregor	2	„	„	East Indies.
J. Gibbons	3	November	„	East Indies.
R. McNab, M.D.	26	January	1858	Glasgow.
R. B. Smyth, M.D.	26	„	„	Great Yarmouth.
D. Macqueen, M.D.	26	„	„	Colchester.
G. Peacocke, M.D.	26	„	„	East Indies.
G. E. Gains	26	„	„	East Indies.
J. E. Moffatt	26	„	„	East Indies.
J. Hoffmann, M.D.	25	June	„	Chatham.
B. Tydd	16	July	„	Buttevant.
G. Pain	30	„	„	China.
W. J. Ingham	24	August	„	Curragh.
F. Holton, M.B.	24	„	„	East Indies.
F. W. Knox	24	September	„	East Indies.
T. Blatherwick	31	December	„	Canada.
J. K. Leet	31	„	„	Cape of Good Hope.
J. McG. Laing	31	„	„	East Indies.
W. A. Thomson, M.B.	31	„	„	
G. P. M. Woodward, M.D.	31	„	„	Chatham.
R. T. Buckle, M.D.	31	„	„	East Indies.
C. M. M. Miller, M.D.	31	„	„	Chatham.
F. Cogan	31	„	„	Ceylon.
P. McDermott, M.D.	31	„	„	East Indies.
J. L. Jameson	31	„	„	East Indies.
A. Bell	31	„	„	East Indies.
E. A. Brien	31	„	„	Gold Coast.
C. T. Abbott, M.B.	31	„	„	Sierra Leone.
T. G. Bone, M.D.	18	January	1859	Canada.

Name.	*Date of Appointment.*			*Station.*
J. Campbell, M.D.	25	February	1859	Corfu.
H. B. Franklyn, M.D.	11	March	„	Chatham.
J. P. Cunningham, M.D.	11	„	„	Limerick.
T. G. FitzGerald	8	April	„	London.
J. O'Nial	5	May	„	East Indies.
D. R. Rennie	18	November	„	China.
C. C. Rutherford	2	December	„	China.
W. Skeen, M.D.	13	„	„	Gambia.
P. A. McDermott	16	„	„	

APOTHECARIES.

J. Schembri	14	October	1813	Corfu.
J. M'Intosh	1	September	1854	Cape of Good Hop
F. Fernandez	20	February	1855	China.
J. Andrews	5	December	1856	Malta.

STAFF ASSISTANT-SURGEONS.

T. J. Tufnell	11	June	1841	Dublin.
D. O. Hoile, M.D.	14	October	1851	Stirling.
T. C. Brady	21	May	1852	Ceylon.
J. S. Chartres	11	June	„	Parkhurst.
E. W. Skues, M.B.	11	„	„	
B. Lane	23	July	„	London.
T. W. Fox, M.B.	23	„	„	Canada.
W. S. Whylock, M.D.	25	December	„	East Indies.
J. J. Scott	21	January	1853	Cape of Good Hop
R. Speedy	11	March	„	Cape of Good Hop
J. Ferguson	23	April	„	Mauritius.
W. Snell	6	May	„	China.
W. T. Harding	13	„	„	Corfu.
A. F. Turner	26	July	„	Cape of Good Hop
W. Stewart, M.D.	29	„	„	Parkhurst.
P. Davidson, M.D.	5	August	„	Aberdeen.
F. L. FitzGerald	12	„	„	China.
W. P. Frazer	21	October	„	Jamaica.
H. J. G. Atkinson	28	„	„	Dublin.
F. W. Moore	28	„	„	Eastbourne.
J. E. Young, M.D.	28	„	„	Nova Scotia.
G. Evans	24	March	1854	Exeter.
W. M. Webb	28	„	„	East Indies.
A. M. Tippetts	7	April	„	West Indies.
D. Woods	7	„	„	Canada.
E. Y. Kellett	28	„	„	Corfu.
S. J. Bayfield	5	May	„	Gibraltar.
T. S. Teevan	19	„	„	Gold Coast.
A. Bryson, M.D.	19	„	„	Jamaica.
R. W. Jackson	26	„	„	Dublin.
H. Titterton, M.D.	26	„	„	Tasmania.
L. O. Patterson	20	June	„	East Indies.
E. H. Roberts	25	„	„	Canterbury.
J. Sparrow	30	„	„	East Indies.
D. O'Donovan, M.D.	14	July	„	Plymouth.
A. Salter	14	„	„	Cape of Good Hope.
R. Wolseley	28	„	„	Pembroke.
F. Collins, M.D.	1	September	„	Winchester.
W. T. Paliologus	1	„	„	Walmer.
J. V. Seddall, M.D.	13	October	„	New Columbia.
T. Ball	3	November	„	West Indies.
A. Semple	10	„	„	Nova Scotia.
W. F. Cullen	1	December	„	Bermuda.
W. C. Roe	1	„	„	Birr.
R. G. Dickson, M.D.	14	„	„	Corfu.
H. L. Randell	5	January	1855	Jamaica.
J. Michael	10	„	„	Templemore.
W. Stockwell	31	„	„	Malta.

Name.	*Date of Appointment.*			*Station.*
T. Kennedy	30	March	1855	West Indies.
D. Stranaghan, M.D.	8	April	„	Canada.
C. M. Jessop	17	„	„	Hong Kong.
R. Turner	17	„	„	Malta.
A. C. Robertson	1	June	„	Limerick.
J. A. Turner	7	July	„	China.
T. B. P. O'Brien	29	September	„	Belfast.
N. Ffolliott	18	October	„	Portsmouth.
J. Goodwin	5	December	„	Hong Kong.
C. Martin	15	„	„	
A. Morphew	18	January	1856	Gambia.
W. O'Halloran	18	February	„	
W. Page	23	„	„	China.
F. Oakes	27	„	„	Gambia.
T. C. Beale	27	March	1857	Gambia.
W. Alexander	28	September	„	East Indies.
C. O'Callaghan	6	November	„	
A. W. Beveridge, M.D.	6	„	„	Chatham.
J. Jameson, M.D.	9	„	„	Canada.
G. Bouchier	9	„	„	Cork.
E. Brock	8	December	„	Cape of Good Hope.
J. Gorman	22	January	1858	Ceylon.
J. Mackay, M.D.	18	February	„	
J. Lander, M.D.	5	March	„	Gold Coast.
W. Curran	10	„	„	Pembroke.
J. H. Hunt	10	„	„	Canada.
W. M. Trestrail	16	April	„	
C. Gray	22	„	„	China.
J. Carlaw	22	„	„	China.
J. Thompson	22	„	„	Fermoy.
J. Niven	22	„	„	New Zealand.
J. Paxton, M.D.	22	„	„	Canada.
E. Hopkins	22	„	„	East Indies.
F. L. G. Gunn	23	„	„	Gold Coast.
F. E. Scanlan	30	„	„	Cape of Good Hope.
G. R. Woolhouse	7	May	„	East Indies.
A. Croker	7	„	„	East Indies.
W. A. Hope, M.B.	7	„	„	East Indies.
J. Bradshaw	7	„	„	
T. T. Gardner	7	„	„	East Indies.
A. Moffit	25	„	„	China.
R. J. W. Orton	25	„	„	China.
C. Rattray, M.D.	25	„	„	China.
J. Wiles	4	June	„	East Indies.
H. W. Devlin	22	„	„	China.
T. M. O'Brien	22	„	„	East Indies.
H. Scott	22	„	„	New Zealand.
W. P. P. Mackesy	1	July	„	East Indies.
J. Mackenzie, M.D.	5	August	„	China.
J. Walsh	5	„	„	Gibraltar.
J. Kinahan	5	„	„	China.
S. Argent	5	„	„	China.
G. Palatiano, M.D.	18	„	„	Corfu.
F. O'Conor	26	„	„	Chatham.
C. D. Campbell, M.D.	1	September	„	
A. J. Ferguson	1	„	„	Ceylon.
J. Speedy	1	„	„	Ceylon.
St. J. Killery	22	„	„	
L. A. White	22	„	„	Ceylon.
W. Holmes	22	„	„	Mauritius.
E. Hoile M.D.	22	„	„	China.
T. A. C. Macarthur	22	„	„	Hong Kong.
C. Longmore	22	„	„	China.
R. White	22	„	„	China.
T. Barnwell	22	„	„	China.
C. B. Mosse	8	October	„	Jamaica.
F. A. Turton	13	October	„	East Indies.
G. F. Adams	13	„	„	East Indies.

Name.	*Date of Appointment.*			*Station.*
C. F. Squire	13	October	1858	East Indies.
F. E. M'Farland	1	November	,,	East Indies.
T. Ramsay	1	,,	,,	East Indies.
W. K. Stewart, M.D.	1	,,	,,	East Indies.
J. J. M'Carthy, M.D.	16	,,	,,	China.
J. Martin	16	,,	,,	
J. W. Lougheed	16	,,	,,	East Indies.
G. Smith	22	,,	,,	East Indies.
R. A. Allen, M.D.	23	,,	,,	Ceylon.
T. Hession	1	December	,,	East Indies.
E. Wilkes	1	,,	,,	East Indies.
G. E. Gascoyen	1	,,	,,	East Indies.
A. Mackay	1	,,	,,	East Indies.
W. R. Kerans	14	,,	,,	China.
E. L. Low, M.B.	14	,,	,,	China.
T. Murtagh	14	,,	,,	China.
G. Park, M.B.	14	,,	,,	East Indies.
J. S. Duncan, M.D.	14	,,	,,	East Indies.
R. Henry	14	,,	,,	East Indies.
R. M. Gilchrist, M.D.	14	,,	,,	East Indies.
H. J. Bailey	12	January	1859	China.
H. Walker	12	,,	,,	East Indies.
W. Hensman	12	,,	,,	Cape of Good Hope.
A. Sanderson	12	,,	,,	Cape of Good Hope.
W. Armstrong	12	,,	,,	East Indies.
J. J. C. Rogers	12	,,	,,	Corfu.
J. S. Allanby, M.D.	1	February	,,	East Indies.
G. Calvert	1	,,	,,	Gambia.
T. Seward, M.D.	1	,,	,,	Cape of Good Hope.
J. Watson	1	,,	,,	China.
J. D. Sainter	1	March	,,	China.
J. Clarke, M.D.	1	,,	,,	East Indies.
W. Millar	1	,,	,,	East Indies.
K. J. Parr	1	,,	,,	Cork.
W. Orr	1	,,	,,	East Indies.
E. Parsonage, M.D.	1	,,	,,	East Indies.
C. A. Fraser	1	,,	,,	China.
H. S. E. Schroeder	1	,,	,,	Sierra Leone.
G. C. Gribbon, M.B.	20	April	,,	Templemore.
W. Ligertwood, M.D.	20	,,	,,	Shorncliffe.
G. Cardell	20	,,	,,	Portsmouth.
J. Land, M.D.	20	,,	,,	Templemore.
M. S. Grace, M.D.	20	,,	,,	Winchester.
C. E. Smith, M.D.	20	,,	,,	Great Yarmouth.
J. H. T. King	20	,,	,,	East Indies.
A. Jennings, M.D.	20	,,	,,	Shorncliffe.
C. W. Watling	20	,,	,,	Canterbury.
M. Tracy	20	,,	,,	Canterbury.
G. Simon, M.D.	20	,,	,,	Canterbury.
F. T. M'Carthy	20	,,	,,	Cork.
T. Heazle	20	,,	,,	Colchester.
R. Tate, M.D.	20	,,	,,	Great Yarmouth.
S. K. Ray	20	,,	,,	Colchester.
G. E. Tait	20	,,	,,	Winchester.
G. A. Davidge	20	,,	,,	Buttevant.
V. Maher	20	,,	,,	China.
W. Langston	20	,,	,,	Chatham.
A. E. Bartlet	20	,,	,,	Plymouth.
R. Storey	20	,,	,,	Chichester.
J. Adsetts	13	June	,,	Woolwich.
E. H. Lloyd, M.B.	13	,,	,,	Woolwich.
J. Y. Donaldson, M.D.	13	,,	,,	Great Yarmouth.
O. Codrington	13	,,	,,	Portsmouth.
E. Drew	13	,,	,,	Woolwich.
J. Adcock, M.D.	13	,,	,,	Colchester.
H. Y. Howison, M.D.	13	,,	,,	Chelsea Hospital.
G. F. Spry	13	,,	,,	Woolwich.
J. T. Milburn	13	,,	,,	Chathamh.

Name.	*Date of Appointment.*			*Station.*
J. A. Illingworth	13	June	1859	Chatham.
R. A. P. Grant	13	,,	,,	Aberdeen.
A. H. Orpen	13	,,	,,	Chatham.
A. Thomson, M.D.	13	,,	,,	Chatham.
G. H. Dyer	13	,,	,,	Chatham.
J. A. B. Horton, M.D.	5	September	,,	Gold Coast.
W. B. Davies, M.D.	5	,,	,,	Gold Coast.
J. T. Tulloch, M.D.	11	October	,,	Colchester.
A. C. Gaye	11	,,	,,	Plymouth.
W. E. Alston, M.D.	11	,,	,,	Athlone.
J. S. Joyner	11	,,	,,	Athlone.
C. Henderson	11	,,	,,	Belfast.
J A. Scott	11	,,	,,	Belfast.
A. Royle	11	,,	,,	Colchester.
W. D. Smythe	11	,,	,,	Chatham.
T. Wood, M.D.	11	,,	,,	Chichester.
J. B. Jardine	11	,,	,,	Fermoy.
J. E. Stewart, M.D.	11	,,	,,	Queenstown.
H. C. Guinness	11	,,	,,	Chatham.
A. O. Cowan, M.D.	11	,,	,,	Limerick.
J. S. C. Collier	11	,,	,,	Chatham.
W. Creagh	15	,,	,,	Fermoy.

ACTING ASSISTANT-SURGEONS.

H. Rowe	10	September	1857	Yarmouth, Isle of Wight.
T. Callaway	17	November	,,	
T. Gross, M.D.	12	February	1858	Jersey.
J. M. Wills	16	March	,,	Devonport.
P. Lee	23	,,	,,	Portsmouth.
J. T. Mitchell	30	,,	,,	Walmer.
W. W. Coleman	30	,,	,,	Woolwich.
J. Benbow, M.D.	5	April	,,	Curragh.
G. C. Rose	5	,,	,,	Fermoy.
J. Craven	5	,,	,,	Limerick.
J. W. Crow	30	,,	,,	Buttevant.
M. L. Burrows	30	,,	,,	Great Yarmouth.

REGIMENTAL.

Regiment.	Name.	Rank.	Date of Appointment.	Station.
CAVALRY.				
1st Life Guards	J. Cockburn	Surg.-Major	1 Oct. 1858	Windsor.
do.	O. W. George, M.D.	Asst.-Surg.	6 June 1851	
2nd Life Guards	T. Tardrew	Surgeon	23 May 1851	Regent's Park.
do.	F. T. Buckland	Asst.-Surg.	15 Aug. 1851	
Rl. H. Guards	C. G. Logie, M.D.	Surgeon	26 Nov. 1852	Hyde Park.
do.	F. G. Kerin	Asst.-Surg.	18 Aug. 1846	
1st Drg. Guards	W. H. Jephson, M.D.	Surgeon	12 Jan. 1855	East Indies.
do.	W. A. Davidson, M.D.	Asst.-Surg.	28 Mar. 1854	
do.	E. L. M'Sheehy, M.D.	do.	27 May 1857	
2nd Drg. Guards	H. D. Massy, M.D.	Surgeon	28 Mar. 1854	East Indies.
do.	J. H. Robotham	Asst.-Surg.	23 April 1855	
do.	R. F. Andrews	do.	30 Sept. 1853	
3rd Drg. Guards	R. M. Allen	Surgeon	28 Mar. 1854	East Indies.
do.	C. J. White	Asst.-Surg.	28 Mar. 1854	
do.	St. J. Stanley	do.	24 Feb. 1854	
4th Drg. Guards	R. Cooper	Surgeon	18 Mar. 1853	Brighton.
do.	W. Macnamara	Asst.-Surg.	6 Oct. 1854	
5th Drg. Guards	W. J. Fyffe, M.D.	Surgeon	1 May 1855	Aldershot.
do.	W. Cattell	Asst.-Surg.	28 Mar. 1854	

Regiment.	Name.	Rank.	Date of Appointment.	Station.
6th Drg. Guards	D. S. Smith	Surgeon	28 Jan. 1859	**East India.**
do.	C. J. Davenport, M.D. ..	Asst.-Surg.	15 Aug. 1854	
do.	S. A. Lithgow	do.	3 Feb. 1855	
7th Drg. Guards	E. J. Franklyn, M.D. ..	Surgeon	15 May 1855	**East India.**
do.	O. Smith	Asst.-Surg.	4 Feb. 1853	
do.	E. M'Gill	do.	8 Jan. 1855	
1st Dragoons ..	A. Forteath, M.D. ..	Surgeon	28 Mar. 1854	**Dublin.**
do.	S. B. Gibb, M.D. ..	Asst.-Surg.	17 May 1855	
2nd Dragoons ..	A. P. Lockwood ..	Surgeon	21 Sept. 1852	**Newbridge.**
do.	T. Rudd, M.D. ..	Asst.-Surg.	1 Aug. 1857	
3rd Dragoons ..	W. O. Mackenzie, M.D. ..	Surg.-Major	4 Jan. 1859	**Dublin.**
do.	J. C. Agnis	Asst.-Surg.	11 Aug. 1854	
4th Dragoons ..	A. Alexander	Surg.-Major	1 Oct. 1858	**Manchester.**
do.	J. C. Campbell, M.D. ..	Asst.-Surg.	23 June 1854	
5th Dragoons ..	H. Huish, M.D.	Surgeon	15 Aug. 1854	**Newbridge.**
do.	J. Atkinson	Asst.-Surg.	10 Mar. 1858	
6th Dragoons ..	F. H. Baxter, M.D. ..	Surgeon	15 Aug. 1854	**East India.**
do.	O. Barnett	Asst.-Surg.	24 Nov. 1854	
do.	R. G. Burton, M.D. ..	do.	24 Feb. 1854	
7th Dragoons ..	H. Kendall, M.D. ..	Surgeon	6 Oct. 1854	**East India.**
do.	G. M. Slaughter ..	Asst.-Surg.	13 Dec. 1844	
do.	T. A. Thornhill, M.B. ..	do.	28 May, 1857	
8th Dragoons ..	J. H. Llewelyn	Surgeon	9 Feb. 1855	**East India.**
do.	H. Sherlock	Asst.-Surg.	15 Dec. 1854	
do.	R. R. Scott	do.	28 July 1854	
9th Dragoons ..	J. J. Clifford, M.D. ..	Surgeon	28 Aug. 1857	**Exeter.**
do.	S. Fuller	Asst.-Surg.	23 July 1855	
10th Dragoons	T. Fraser, M.D. ..	Surgeon	9 Mar. 1855	**Hounslow.**
do.	L. G. Hooper	Asst.-Surg.	28 April 1854	
11th Dragoons	J. B. St. C. Crosse ..	Surgeon.	16 June 1848	**Birmingham.**
do.	O. B. Miller	Asst.-Surg.	28 Mar. 1854	
12th Dragoons	G. A. Turnbull	Surgeon	28 Dec. 1855	**East India.**
do.	E. M. Wrench	Asst.-Surg.	3 Nov. 1854	
do.	S. Gibson, M.B. ..	do.	23 Nov. 1852	
13th Dragoons	R. C. Anderson, M.D. ..	Surgeon	18 May 1849	**Piershill.**
do.	L. Armstrong	Asst.-Surg.	7 April 1854	
14th Dragoons	W. Arden	Surgeon	25 July 1851	**East India.**
do.	R. C. Lofthouse, M.D. ..	Asst.-Surg.	14 July 1854	
do.	R. B. Forsyth-Brown ..	do.	8 Dec. 1857	
15th Dragoons	W. G. Watt	Surgeon	28 Mar. 1854	**Dublin.**
do.	C. H. Browne	Asst.-Surg.	1 Aug. 1857	
16th Dragoons	W. K. Park	Surgeon	6 Oct. 1854	**York.**
do.	A. K. Rickards	Asst.-Surg.	24 April 1855	
17th Dragoons	J. Kellie, M.D.	Surgeon	2 Oct. 1857	**East India.**
do.	Y. H. Johnson	Asst.-Surg.	20 Nov. 1855	
do.	G. C. Clery	do.	13 Oct. 1854	
18th Dragoons	E. S. Docker	Surgeon	14 Mar. 1851	**Aldershot.**
do.	M. Grant, M.D.	Asst.-Surg.	10 Mar. 1857	
RL. ARTILLERY.				
Horse Brigade	J. M. S. Fogo	Surgeon	13 April 1855	**Woolwich.**
do.	H. Clifford	Asst.-Surg.	15 July 1854	
do.	J. C. H. Wright, M.D. ..	do.	1 Jan. 1853	
do.	J. Wood	do.	10 Jan. 1855	
do.	T. Tarrant, M.D. ..	do.	16 June 1854	
do.	R. Webb	do.	15 Dec. 1854	
do.	J. A. M'Munn, M.D. ..	do.	13 Oct. 1853	
do	R. Lewer	do.	1 Aug. 1857	
do.	J. T. M. Symons, M.D. ..	do.	8 Dec. 1857	
do.	W. B. Wallis	do.	27 May 1853	
do.	J. B. Cockburn, M.D. ..	do.	3 Mar. 1854	

Regiment.	Name.	Rank.	Date of Appointment.	Station.
1st Brigade	M. Combe, M.D.	Surgeon	24 April 1855	Woolwich.
do.	J. M. Fiddes, M.B.	Asst.-Surg.	1 Nov. 1858	
do.	W. Graves	do.	22 Sept. 1858	
2nd Brigade	H. W. Voss	Surgeon	26 Jan. 1858	Dover.
do.	S. P. Woodfull	Asst.-Surg.	9 Feb. 1856	
3rd Brigade	T. Park	Surgeon	21 Dec. 1855	Plymouth.
do.	E. F. O'Leary	Asst.-Surg.	9 Feb. 1856	
4th Brigade	J. Duff, M.D.	Surgeon	8 Jan. 1856	Woolwich.
do.	H. Harrison	Asst.-Surg.	16 Nov. 1858	
do.	A. S. K. Prescott	do.	6 May 1858	
do.	W. Temple, M.B.	do.	1 Nov. 1858	
do.	W. T. Morgan, M.D.	do.	1 Feb. 1859	
do.	W. R. Stewart	do.	11 Aug. 1854	
do.	A. Richmond	do.	13 Oct. 1858	
5th Brigade	S. H. Fasson, M.D.	Surgeon	23 Mar. 1855	Gibraltar.
do.	S. H. Dickerson	Asst.-Surg.	23 Dec. 1854	
do.	W. Fletcher	do.	4 May 1855	
6th Brigade	W. Perry	Surgeon	20 July 1855	Malta.
do.	E. J. Hopwood	Asst.-Surg.	29 Jan. 1855	
do.	J. A. Marston, M.D.	do.	10 Nov. 1854	
7th Brigade	E. Gilborne	Surgeon	5 Nov. 1855	Montreal.
do.	C. W. Griffith	Asst.-Surg.	12 Jan. 1859	
do.	M. G. Jones	do.	19 Oct. 1857	
do.	H. C. Miles	do.	23 Dec. 1854	
8th Brigade	R. F. V. De Lisle	Surgeon	5 Nov. 1852	Portsmouth.
do.	J. Robinson	Asst.-Surg.	22 Sept. 1858	
do.	B. Burland, M.B.	do.	1 Dec. 1858	
do.	F. R. Hogg, M.D.	do.	5 Aug. 1858	
do.	E. T. Palmer	do.	12 Jan. 1859	
do.	G. R. Tate, M.D.	do.	17 Mar. 1858	
9th Brigade	A. Rudge	Surgeon	2 Oct. 1857	Dublin.
do.	J. Bourke	Asst.-Surg.	25 May 1858	
do.	L. Carey	do.	13 Oct. 1858	
do.	G. A. Grant	do.	12 Jan. 1859	
do.	A. Lewer	do.	1 Dec. 1858	
do.	E. Hardinge	do.	10 Mar. 1858	
10th Brigade	W. H. Mackintosh, M.D.	Surgeon	1 April 1854	Guernsey.
do.	J. S. Comyn	Asst.-Surg.	22 Jan. 1858	
do.	J. d'Altera	do.	22 April 1858	
11th Brigade	R. C. Elliot, C.B.	Surg.-Major	21 May 1855	Bengal.
do.	R. C. Crean	Asst.-Surg.	1 Sept. 1858	
do.	J. W. Rimmer	do.	2 April 1855	
do.	G. Sharp	do.	13 April 1855	
do.	W. Haughton, M.B.	do.	28 April 1854	
do.	J. H. Finnemore	do.	23 June 1854	
do.	A. R. Smith	do.	21 Feb. 1855	
do.	F. H. Forshall	do.	3 Oct. 1855	
do.	W. Tanner	do.	9 Nov. 1857	
12th Brigade	E. S. Protheroe	Surgeon	16 Mar. 1855	Mauritius.
do.	J. F. Lougheed	Asst.-Surg.	15 Aug. 1854	
do.	A. Hawkins	do.	15 April 1854	
do.	W. J. Cumming, M.D	do.	9 Nov. 1857	
13th Brigade	W. A. Dassauville, M.D.	Surg.-Major	1 Oct. 1858	Bombay.
do.	A. J. L. Hepworth	Asst.-Surg.	26 Jan. 1855	
do.	G. D. Milne, M.D.	do.	15 Sept. 1857	
do.	J. H. Hearn	do.	13 Oct. 1854	
do.	A. W. P. Pinkerton, M.D.	do.	22 June 1858	
do.	W. Y. Jeeves	do.	7 April 1854	
do.	J. Barker	do.	15 July 1854	
do.	R. U. Cashman, M.D.	do.	18 May 1855	
14th Brigade	H. C. Walshe, M.D.	Surgeon	8 Dec. 1854	Bengal.
do.	S. H. Halahan, M.D.	Asst.-Surg.	4 May 1855	
do.	R. W. Clifton	do.	28 Sept. 1857	
do.	T. J. Orton	do.	17 Jan. 1855	

Regiment.	Name.	Rank.	Date of Appointment.	Station.
14th Brigade	H. F. Paterson, M.D.	Asst.-Surg.	19 Oct. 1857	
do.	R. A. Chapple	do.	28 April 1854	
do.	R. D. Burn, M.D.	do.	19 Oct. 1857	
do.	D. F. De Hodgson, M.D.	do.	28 Sept. 1857	
do.	A. D. Gulland	do.	23 June 1854	
do.	J. M. Taylor	do.	15 Sept. 1857	
Depôt Brigade	J. A. Davis	Surg.-Major	13 Oct. 1853	Woolwich.
do.	J. S. Litle, A.B.	do.	1 Oct. 1858	
do.	G. T. Ferris	do.	1 Oct. 1858	
do.	M. B. Gallwey	do.	1 Oct. 1858	
do.	J. Bent	do.	21 Dec. 1855	
do.	H. Briscoe, M.D.	Surgeon	13 April 1855	
do.	J. R. M. Lewis, M.D.	do.	7 Dec. 1855	
do.	W. G. N. Manley	Asst.-Surg.	20 Feb. 1855	
do.	S. Roch	do.	14 Dec. 1854	
do.	H. R. L. Veale, M.D.	do.	14 Aug. 1855	
MIL. TRAIN.				
1st Battalion	O'C. D'Arcey, M.D.	Surgeon	13 Jan. 1855	China.
2nd do.	A. M'Arthur, M.D.	do.	11 May 1855	Aldershot.
3rd do.	F. Reynolds	do.	8 Dec. 1854	Woolwich.
4th do.	W. Braybrooke	do.	2 Sept. 1853	Shorncliffe.
5th do.	A. M. Macbeth	do.	29 June 1855	Curragh.
6th do.	J. A. Woolfreyes, M.D.	do.	20 July 1855	Woolwich.
7th do.	D. P. Barry	do.	8 Dec. 1854	Aldershot.
INFANTRY.				
Gren. Gds. 1st B.	G. E. Blenkins	Surg.-Major	24 Jan. 1858	Wellington B. London.
do. do.	G. P. Girdwood	Asst.-Surg.	24 Nov. 1854	
do. do.	F. G. Hamilton	do.	28 April 1854	
do. 2nd Bat.	J. J. M. Wardrop	Batt. Surg.	2 Mar. 1855	Aldershot and Windsor.
do. do.	W. R. Lane	Asst.-Surg.	29 Dec. 1854	
do. do.	W. H. Pickford, M.B.	do.	19 Feb. 1858	
do. 3rd Bat.	C. R. Nicoll	Batt. Surg.	29 Dec. 1854	Dublin.
do. do.	H. T. H. Lawrence	Asst.-Surg.	24 Feb. 1854	
do. do.	C. C. Read	do.	13 May 1853	
Colds. Gds. 1st B.	J. Monro, M.D.	Surg. Major	20 Feb. 1853	Portman-street, London.
do. do.	C. V. Cay	Asst.-Surg.	12 June 1846	
do. do.	A. B. R. Myers	do.	26 Sept. 1859	
do. 2nd Bat.	J. Wyatt	Batt. Surg.	9 April 1857	Tower, London.
do. do.	J. W. Trotter	Asst. Surg.	26 May 1854	
do. do.	R. Farquharson, M.D.	do.	12 Jan. 1859	
S. Fusil. Gds. 1 B.	F. Robinson, M.D.	Batt. Surg.	20 Mar. 1857	St. George's B. London.
do. do.	F. B. Baker	Asst.-Surg.	3 Mar. 1854	
do. do.	G. Perry	do.	29 Jan. 1855	
do. 2nd Bat.	J. A. Bostock, M.D.	Surg.-Major	20 Mar. 1857	Wellington B. London.
do. do.	A. G. Elkington	Asst.-Surg.	11 Mar. 1853	
do. do.	H. Turner	do.	19 May 1854	
1st Foot, 1st Bat.	C. B. Hearn	Surgeon	16 Nov. 1849	East Indies.
do. do.	R. Atkinson	Asst.-Surg.	5 May 1854	
do. do.	J. W. Hulseberg	do.	14 Dec. 1854	
do. do.	M. L. White	do.	22 Sept. 1858	
do. 2nd Bat.	C. W. Woodroffe	Surgeon	26 Jan. 1858	Hong Kong.
do. do.	T. K. Birnie	Asst.-Surg.	7 Jan. 1853	
do. do.	A. J. Mackay, M.D.	do.	27 Oct. 1854	
do. do.	W. White	do.	22 June 1858	
2d Foot, 1st Bat.	H. C. Foss	Surgeon	17 June 1851	C. of G. Hope.

Regiment.	Name.	Rank.	Date of Appointment.	Station.
2nd Foot, 1st B.	H. J. Rose	Asst.-Surg.	6 Mar. 1855	
do. do.	S. H. Marshall	do.	7 May 1858	
do. do.	R. B. Carson, M.B.	do.	22 June 1858	
do. 2nd Bat.	D. J. Doherty	Surgeon	20 July 1855	Ionian Islands.
do. do.	J. Sinclair, M.D.	Asst.-Surg.	5 Aug. 1853	
do. do.	H. C. Peppin	do.	9 Nov. 1857	
3d Foot, 1st Bat.	J. Burke	Surgeon	22 Dec. 1848	East Indies.
do. do.	T. Teevan	Asst.-Surg.	30 June 1854	
do. do.	T. Dolan.	do.	1 Sept. 1854	
do. do.	J. H. Beath, M.D.	do.	15 Sept. 1857	
do. 2nd Bat.	F. O. Barker, M.D.	Surgeon	5 May 1854	Malta.
do. do.	H. M'Niece	Asst. Surg.	6 Nov. 1855	
do. do.	J. Wilson, M.B.	do.	5 Aug. 1858	
4th Foot, 1st Bat.	J. Gorringe, M.D.	Surgeon	29 June 1855	East Indies.
do. do.	J. Ekin, M.B.	Asst.-Surg.	7 April 1854	
do. do.	J. L. Erskine, M.D.	do.	1 Sept. 1854	
do. do.	E. B. Kearney	do.	22 Jan. 1858	
do. 2nd Bat.	H. Fisher	Surgeon	2 Oct. 1857	Corfu.
do. do.	E. Miller, M.D.	Asst.-Surg.	22 Jan. 1858	
do. do.	J. V. Lane	do.	13 Oct. 1858	
5th Foot, 1st Bat.	W. K. Swettenham, M.D.	Surgeon	14 Oct. 1851	
do. do.	T. R. Whitty	Asst.-Surg.	11 Nov. 1858	East Indies.
do. do.	C. H. Leet	do.	22 Jan. 1858	
do. do.	G. S. Cameron	do.	7 May 1858	
do. 2nd Bat.	F. Reid, M.D.	Surgeon	25 Sept. 1849	Mauritius.
do. do.	J. W. Gillespie, M.D.	Asst.-Surg.	22 Jan. 1858	
do. do.	P. F. Newland	do.	25 May 1858	
6th Foot, 1st Bat.	A. P. Cahill, M.D.	Surgeon	28 Aug. 1857	East Indies.
do. do.	A. R. Hudson, M.B.	Asst.-Surg.	26 May 1854	
do. do.	W. Hillman	do.	22 Jan. 1858	
do. do.	H. H. Maclean	do.	22 April 1858	
do. 2nd Bat.	G. Hyde, M.D.	Surgeon	1 May 1855	Gibraltar.
do. do.	B. C. Kerr	Asst.-Surg.	17 Nov. 1855	
do. do.	T. Ryan	do.	1 Sept. 1858	
7th Foot, 1st Bat.	T. Moorhead, M.D.	Surgeon	3 Nov. 1854	East Indies.
do. do.	*V.C.*, T. E. Hale, M.D.	Asst.-Surg.	14 Dec. 1854	
do. do.	C. Ricketts	do.	28 April 1854	
do. do.	T. Sheehy, M.D.	do.	26 May 1854	
do. 2nd Bat.	E. W. T. Mandeville	Surgeon	16 Feb. 1855	Gibraltar.
do. do.	M. Quinlan	Asst.-Surg.	8 Dec. 1857	
do. do.	E. A. Gibbon	do.	1 Sept. 1858	
8th Foot, 1st Bat.	F. C. Annesley	Surg.-Major	17 Sept. 1859	East Indies.
do. do.	W. H. Yates	Asst.-Surg.	24 Nov. 1854	
do. do.	T. J. Biddle	do.	15 Aug. 1854	
do. do.	R. W. Saunders	do.	22 Jan. 1858	
do. 2nd Bat.	J. Madden	Surgeon	2 Oct. 1857	Gibraltar.
do. do.	W. Jay	Asst.-Surg.	22 Jan. 1858	
do. do.	J. E. O'Loughlin	do.	5 Aug. 1858	
9th Foot, 1st Bat.	J. Carroll, M.B.	Surgeon	26 Jan. 1858	Shorncliffe.
do. do.	J. C. Ovens	Asst.-Surg.	16 Dec. 1853	
do. do.	J. C. Johnston	do.	3 Nov. 1854	
do. 2nd Bat.	W. Armstrong	Surgeon	26 Jan. 1858	Corfu.
do. do.	C. C. Piper	Asst.-Surg.	12 Sept. 1855	
do. do.	J. H. Jeffcoat	do.	5 Aug. 1858	
10th Foot, 1st B.	C. A. Gordon, M.D., C.B.	Surgeon	10 July 1846	Plymouth.
do. do.	J. Tulloch	Asst.-Surg.	7 June 1854	
do. do.	T. J. Tucker	do.	18 July 1855	
do. 2nd Bat.	F. Douglas, M.D.	Surgeon	2 Oct. 1857	C. of G. Hope.
do. do.	T. F. Langstaff	Asst.-Surg.	22 Jan. 1858	
do. do.	W. L. Baker	do.	22 June 1858	
11th Foot, 1st B.	N. Heffernan, M.B.	Surgeon	7 Nov. 1851	Aldershot.
do. do.	F. H. Macfadin	Asst.-Surg.	1 Dec. 1854	
do. do.	P. Divorty, M.B.	do.	18 Nov. 1853	
do. 2nd Bat.	W. T. Black	Surgeon	20 July 1855	Aldershot.

Regiment.	Name.	Rank.	Date of Appointment.	Station.
11th Foot, 2nd B.	A. Macintyre, M.D.	Asst.-Surg.	22 Jan. 1858	
do. do.	W. Everet	do.	16 Nov. 1858	
12th Foot, 1st B.	W. Dick, M.D.	Surg.-Major	1 Oct. 1858	Tasmania.
do. do.	G. B. F. Arden	Asst.-Surg.	9 June 1854	
do. do.	A. H. F. Lynch	do.	7 May 1858	
do. 2nd Bat.	D. C. Wodsworth	Surgeon	26 Jan. 1858	Aldershot.
do. do.	G. A. Hutton	Asst.-Surg.	23 June 1854	
do. do.	J. W. C. N. Murphy	do.	1 Mar. 1859	
13th Foot, 1st B.	J. Jackson	Surgeon	21 May 1852	East Indies.
do. do.	P. N. Jackson	Asst.-Surg.	28 April 1854	
do. do.	A. E. T. Longhurst	do.	27 Oct. 1854	
do. do.	C. J. Kirwan	do.	20 Mar. 1855	
do. 2nd Bat.	W G. Trousdell, M.D.	Surgeon	13 Dec. 1853	C. of G. Hop
do. do.	N. L. Gray	Asst.-Surg.	22 Jan. 1858	
do. do.	J. Stuart	do.	13 Oct. 1858	
14th Foot, 1st B.	G. S. King, M.D.	Surgeon	29 June 1855	Jamaica.
do. do.	T. M. Bleckley, M.B.	Asst.-Surg.	6 Jan. 1854	
do. do.	J. M. Hyde	do.	3 Nov. 1854	
do. 2nd Bat.	J. E. Carte, M.B.	Surgeon	18 Feb. 1853	Mullingar.
do. do.	T. Bennett	Asst.-Surg.	22 Jan. 1858	
do. do.	A. T. Carbery	do.	16 Nov. 1858	
15th Foot, 1st B.	T. R. Dyce	Surg-Major.	7 June 1859	Jersey.
do. do.	J. D. Healey	Asst.-Surg.	5 May 1855	
do. do.	R. Coffey	do.	22 Jan. 1858	
do. 2nd Bat.	U. W. Evans	Surgeon	8 Dec. 1854	Malta.
do. do.	J. Hinton	Asst.-Surg.	10 Mar. 1858	
do. do.	F. M. Chalk	do.	5 Aug. 1858	
16th Foot, 1st B.	W. G. Swan	Surgeon	21 July 1854	Aldershot.
do. do.	H. Ferguson	Asst.-Surg.	30 July 1855	
do. do.	J. R. Kehoe	do.	15 Sept. 1857	
do. 2nd Bat.	J R. Ffennell	Surgeon	10 Feb. 1852	Clonmel.
do. do.	W. Sly	Asst.-Surg.	8 Dec. 1857	
do. do.	W. A. Gardiner	do.	22 Sept. 1858	
17th Foot, 1st B.	W. P. Ward	Surgeon	26 June 1855	Quebec.
do. do.	W. M. Gibant	Asst.-Surg.	3 Feb. 1854	
do. do.	A. Allan, M.D.	do.	12 Jan. 1859	
do. 2nd Bat.	J E. Clutterbuck, M.D.	Surgeon	2 Oct. 1857	Aldershot.
do. do.	J. G. Cuppage	Asst.-Surg.	10 Mar. 1858	
do. do.	W. Chalmers	do.	14 Dec. 1858	
18th Foot, 1st B.	T. Crawford, M.D.	Surgeon	9 Feb. 1855	East Indies.
do. do.	F. Ffolliott	Asst.-Surg.	1 Aug. 1857	
do. do.	R. A. Hyde	do.	17 Aug. 1857	
do. do.	J. H. H. Tothill	do.	22 June 1858	
do. 2nd Bat.	G. W. Peake, M.D.	Surgeon	2 Oct. 1857	Aldershot.
do. do.	W. J. Spencer	Asst.-Surg.	22 April 1858	
do. do.	H. A. Coghlan	do.	1 Mar. 1859	
19th Foot, 1st B.	H. B. Hassard	Surgeon	26 Jan. 1858	East Indies.
do. do.	E. L. Hifferman	Asst.-Surg.	16 June 1854	
do. do.	J. C. Smith	do.	1 Sept. 1854	
do. do.	C. E. Wikeley	do.	12 Jan. 1859	
do. 2nd Bat.	W. K. Chalmers, M.D.	Surgeon	12 Jan. 1855	Aldershot.
do. do.	D. Macpherson	Asst.-Surg.	10 Mar. 1858	
do. do.	T. Hewlett	do.	1 Feb. 1859	
20th Foot, 1st B.	E. Howard	Surgeon	24 Feb. 1854	East Indies.
do. do.	H. Kelsall	Asst.-Surg.	8 Sept. 1855	
do. do.	F. J. Short	do.	6 Aug. 1855	
do. do.	J. Munday	do.	4 Feb. 1856	
do. 2nd Bat.	T. Guy, M.D.	Surgeon	1 July 1853	Dublin.
do. do.	J. H. G. Meares	Asst.-Surg.	16 May 1855	
do. do.	H. Crump, M.D.	do.	1 Mar. 1859	
21st Foot, 1st B.	D. R. Mackinnon	Surgeon	28 Mar. 1854	Malta.
do. do.	A. J. Greer	Asst.-Surg.	23 July 1852	
do. do.	J. H. West, M.D.	do.	24 Mar. 1854	
do. 2nd Bat.	T. L. Nash, M.D.	Surgeon.	18 Jan. 1859	Aldershot.

Regiment.	Name.	Rank.	Date of Appointment.	Station.
21st Foot, 2nd B.	T. Walsh	Asst.-Surg.	25 May 1858	
do. do.	E. G. Ley, M.D.	do.	1 Mar. 1859	
22nd Foot, 1st B.	A. L. Adams, M.D.	Surgeon	25 Sept. 1855	Dublin.
do. do.	J. J. Adrien	Asst.-Surg.	10 Feb. 1854	
do. do.	W. H. Pollard	do.	7 April 1854	
do. 2nd Bat.	T. Carey	Surgeon	26 Jan. 1858	Malta.
do. do.	F. H. Preston	Asst.-Surg.	10 Mar. 1858	
do. do.	J. E. Clark	do.	1 Feb. 1859	
23rd Foot, 1st B.	P. S. Laing	Surgeon	6 Jan. 1854	East Indies.
do. do.	*V.C.*, H. T. Sylvester, M.D.	Asst.-Surg.	3 Mar. 1854	
do. do.	C. F. Morris	do.	2 Feb. 1855	
do. do.	J. N. Shipton	do.	23 Mar. 1855	
do. 2nd Bat.	A. S. Fogo, M.D.	Surgeon	31 Dec. 1858	Malta.
do. do.	R. W. Berkeley	Asst.-Surg.	22 April 1858	
do. do.	J. Grieg, M.B.	do.	14 Dec. 1858	
24th Foot, 1st B.	R. Gamble, M.D.	Surgeon	12 Mar. 1852	East Indies.
do. do.	C. C. Dempster	Asst.-Surg.	5 May 1854	
do. do.	R. Sutherland	do.	19 Oct. 1857	
do. do.	J. S. Johnston, M.D.	do.	7 May 1858	
do. 2nd Bat.	J. L. Holloway	Surgeon	2 Oct. 1857	Cork.
do. do.	J. Colahan, M.D.	Asst.-Surg.	25 May 1858	
do. do.	T. S. Hollingsworth	do.	3 Nov. 1854	
25th Foot, 1st B.	J. K. Carr, M.D.	Surgeon	11 May 1855	Gibraltar.
do. do.	C. Beaufoy	Asst.-Surg.	23 Dec. 1854	
do. do.	J. C. Rattray, M.D.	do.	8 Dec. 1858	
do. 2nd Bat.	C. R. Robinson	Surgeon	1 May 1855	Preston.
do. do.	J. G. Creasy	Asst.-Surg.	14 Dec. 1854	
do. do.	E. C. Markey	do.	1 Mar. 1859	
26th Foot	J. Coates, M.D.	Surgeon	25 Jan. 1856	Dublin.
do.	J. Mc Letchie	Asst.-Surg.	28 Sept. 1857	
do.	J. Davidge	do.	5 Aug. 1858	
27th Foot	M. S. Todd	Surgeon	28 Mar. 1854	East Indies.
do.	J. Mc L. Cameron, M.B.	Asst.-Surg.	26 May 1854	
do.	L. Kidd, M.B.	do.	26 May 1854	
do.	A. S. Russell, M.D.	do.	1 Aug. 1857	
28th Foot	B. W. Marlow, M.D.	Surgeon	24 Feb. 1854	East Indies.
do.	W. H. Brice	Asst.-Surg.	6 Jan. 1854	
do.	C. G. Irwin	do.	24 Feb. 1854	
do.	W. G. Don, M.D.	do.	22 Jan. 1858	
29th Foot	E. Moorhead, M.D.	Surgeon	25 May 1855	Preston.
do.	W. L. Farmer	Asst.-Surg.	24 April 1855	
do.	W. John	do.	9 Nov. 1857	
30th Foot	R. W. Read	Surgeon	28 Dec. 1855	Curragh.
do.	D. Milroy, M.D.	Asst.-Surg.	7 April 1854	
do.	W. Lindsay	do.	5 Aug. 1858	
31st Foot	T. J. Atkinson	Surgeon	26 Jan. 1858	East Indies.
do.	W. Grantt, M.B.	Asst.-Surg.	9 June 1854	
do.	B. T. Giraud, M.D.	do.	9 Nov. 1857	
do.	C. H. Giraud	do.	10 Mar. 1858	
32nd Foot	W. Boyd	Surgeon	7 Sept. 1858	Dover.
do.	W. H. Harris	Asst.-Surg.	10 Mar. 1855	
do.	*V.C.*, W. Bradshaw	do.	15 Aug. 1854	
33rd Foot	W. Hanbury	Surgeon	3 Nov. 1854	East Indies.
do.	J. Ogilvy, M.B.	Asst.-Surg.	15 July 1853	
do.	T. Clark	do.	7 April 1854	
do.	A. R. Kilroy	do.	12 April 1855	
34th Foot	M. F. Manifold	Surgeon	8 Dec. 1854	East Indies.
do.	W. Haward	Asst.-Surg.	7 June 1854	
do.	F. Pennington	do.	22 April 1858	
do.	E. Masterson	do.	22 April 1858	
35th Foot	J. W. Chambers, M.D.	Surg.-Major.	4 Oct. 1859	East Indies.
do.	E. Thiselton	Asst.-Surg.	20 June 1854	
do.	R. T. G. Catton	do.	7 May 1858	
do.	J. Mahon	do.	22 June 1858	

Regiment.	Name.	Rank.	Date of Appointment.	Station.
36th Foot	J. Jopp, M.D.	Surg.-Major.	22 Feb. 1859	Plymouth.
do.	J. R. Tobin	Asst.-Surg.	21 Oct. 1853	
do.	S. M. Webb, M.D.	do.	19 May 1854	
37th Foot	J. W. Fleming	Surgeon.	2 Oct. 1857	East Indies.
do.	W. Ramsay, M.D.	Asst.-Surg.	15 Dec. 1854	
do.	W. S. Chapman	do.	15 Sept. 1857	
do.	J. Hoysted	do.	10 Mar. 1858	
38th Foot	T. F. Wall	Surgeon.	12 Jan. 1855	East Indies.
do.	D. W. Lawlor	Asst.-Surg.	10 June 1853	
do.	J. H. Lewis	do.	24 Mar. 1854	
do.	T. Wright	do.	21 April 1854	
39th Foot	G. T. Woodman, M.D.	Surgeon.	7 April 1854	Bermuda.
do.	J. H. Ross, M.B.	Asst.-Surg.	16 Dec. 1853	
do.	R. Lindsay, M.B.	do.	14 Dec. 1858	
40th Foot	H. F. Robertson	Surgeon.	2 Oct. 1857	N. S. Wale
do.	T. Mines	Asst.-Surg.	1 Dec. 1854	
do.	B. Stiles	do.	14 April 1855	
41st Foot	J. Leitch, M.D.	Surgeon.	1 May 1855	Jamaica.
do.	F. T. Abbott	Asst.-Surg.	7 April 1854	
do.	G. L. Hinde	do.	15 May 1855	
42nd Foot	J. S. Furlong, M.D.	Surgeon.	9 Feb. 1855	East Indies.
do.	A. Maclean	Asst.-Surg.	7 April 1854	
do.	A. Hooper	do.	16 June 1854	
do.	W. A. Mackinnon	do.	23 Oct. 1857	
43rd Foot	A. Barclay, M.D.	Surgeon.	13 April 1852	East Indies.
do.	C. D. Madden, M.D.	Asst.-Surg.	14 Dec. 1854	
do.	J. J. Henry	do.	18 Jan. 1856	
do.	J. Good	do.	3 Oct. 1857	
44th Foot	J. Mee	Surgeon.	5 May 1854	East Indies.
do.	J. B. Baker	Asst.-Surg.	28 May 1857	
do.	C. J. Kinahan	do.	27 May 1857	
do.	E. G. MacDowell	do.	6 Nov. 1855	
45th Foot	T. C. O'Leary, M.B.	Surgeon.	9 Feb. 1855	Bradford.
do.	A. F. Bartley	Asst.-Surg.	14 Jan. 1853	
do.	J. A. Hanbury, M.B.	do.	30 Sept. 1853	
46th Foot	E. Touch, M.D.	Surgeon.	2 Oct. 1857	East Indies.
do.	J. Meane	Asst.-Surg.	24 Dec. 1852	
do.	J. G. Faught	do.	5 Jan. 1855	
do.	W. Venour	do.	22 Sept. 1858	
47th Foot	W. Singleton, M.D.	Surgeon.	2 Oct. 1857	Shorncliffe.
do.	W. A. White, M.D.	Asst.-Surg.	18 Oct. 1853	
do.	H. Grange	do.	1 Sept. 1854	
48th Foot	G. A. F. Shelton, M.B	Surgeon.	5 May 1854	East Indies.
do.	J. V. de Boissiere	Asst.-Surg.	12 June 1855	
do.	J. G. Grant	do.	19 Oct. 1857	
do.	W. H. Leslie, M.B.	do.	7 May 1855	
49th Foot	J. H. Bews	Surgeon.	1 May 1855	West Indies.
do.	J. Hannan	Asst.-Surg.	7 April 1854	
do.	W. M. Calder	do.	26 May 1854	
50th Foot	J. Fraser, M.D.	Surgeon.	25 Sept. 1855	Ceylon.
do.	G. F. Davis	Asst.-Surg.	7 April 1854	
do.	J. Johnston, M.D.	do.	27 Oct. 1854	
51st Foot	A. Smith, M.D.	Surgeon.	12 Jan. 1855	East Indies.
do.	G. T. Bourke	Asst.-Surg.	8 April 1855	
do.	J. Folliott	do.	7 May 1855	
do.	G. S. Burnside	do.	1 Aug. 1857	
52nd Foot	J. C. Haverty	Surgeon.	29 June 1855	East Indies.
do.	C. A. Mines, M.D.	Asst.-Surg.	14 Mar. 1855	
do.	H. A. Gogarty	do.	29 Aug. 1855	
do.	A. T. MacGowan	do.	15 Sept. 1857	
53rd Foot	J. S. Grant, M.D.	Surgeon.	29 Aug. 1857	East Indies.
do.	R. Hungerford	Asst.-Surg.	26 May 1854	
do.	R. H. Beale	do.	22 Feb. 1855	
do.	W. Ashton, M.B.	do.	15 Sept. 1857	

Regiment.	Name.	Rank.	Date of Appointment.	Station.
54th Foot	W. M. Dowding	Surgeon	19 May 1854	East Indies.
do.	G. Youell	Asst.-Surg.	26 May 1854	
do.	A. Reid	do.	26 May 1854	
do.	C. B. Mathew	do.	9 Nov. 1857	
55th Foot	E. H. Blake, M.D.	Surgeon	7 Jan. 1853	Curragh.
do.	W. J. Rendell	Asst.-Surg.	26 May 1854	
do.	G. H. Finlay	do.	6 Oct. 1854	
56th Foot	W. Deeble	Surgeon	12 Jan. 1855	East Indies.
do.	D. C. Taylor, M.D.	Asst.-Surg.	26 May 1854	
do.	J. Parr	do.	28 May 1857	
do.	W. C. Boyd	do.	22 Jan. 1858	
57th Foot	W. MacAndrew, M.D.	Surgeon	23 Mar. 1855	East Indies.
do.	M. J. Griffin	Asst.-Surg.	22 Sept. 1854	
do.	W. Ferguson	do.	22 Sept. 1854	
do.	J. Davis	do.	10 Mar. 1858	
58th Foot	H. Downes, M.D.	Surg.-Major.	7 Sept. 1855	Aldershot.
do.	R. J. Worthington	Asst.-Surg.	26 May 1854	
do.	W. Barry	do.	25 Jan. 1856	
59th Foot	R. McWharrie, M.D.	Surgeon	4 Nov. 1853	C. of G. Hope.
do.	W. Crisp	Asst.-Surg.	5 Aug. 1858	
do.	W. B. Ramsbotham, M.B.	do.	10 Mar. 1858	
60th Foot, 1st B.	E. W. Young, M.D.	Surgeon	8 Dec. 1854	East Indies.
do. do.	E. J. Hatchell	Asst.-Surg.	15 Jan. 1856	
do. do.	F. W. Wade	do.	15 Sept. 1857	
do. do.	W. S. Oliver, M.D.	do.	15 Sept. 1857	
do. 2nd Bat.	H. J. Schooles, M.D.	Surg.-Major.	22 July 1859	East Indies.
do. do.	G. Young	Asst.-Surg.	5 May 1854	
do. do.	R. O. Hayden	do.	15 Sept. 1857	
do. do.	J. Doran, M.D.	do.	9 Nov. 1857	
do. 3rd Bat.	G. W. P. Sparrow	Surgeon	6 July 1855	East Indies.
do. do.	T. J. Murphy	Asst.-Surg.	28 April 1854	
do. do.	J. Macartney	do.	6 Oct. 1854	
do. do.	Seth Sam.	do.	9 Nov. 1857	
do. 4th Bat.	J. Crerar	Surgeon	6 April 1855	Waterford.
do. do.	J. A. Lamb	Asst.-Surg.	22 June 1858	
do. do.	A. C. McTavish	do.	12 Jan. 1859	
61st Foot	H. T. Reade	Surgeon	3 Nov. 1857	Mauritius.
do.	A. Hoyte	Asst.-Surg.	27 Mar. 1855	
do.	C. Mackinnon	do.	28 Sept. 1857	
62nd Foot	F. W. Tupper	Surgeon	26 Dec. 1851	Nova Scotia.
do.	S. Alder	Asst.-Surg.	3 Nov. 1854	
do.	J. P. Street, M.D.	do.	9 June 1854	
63rd Foot	H. Chrisp, M.B.	Surgeon	22 June 1855	Nova Scotia.
do.	W. W. Mills	Asst.-Surg.	28 Mar. 1854	
do.	F. Odell	do.	28 July 1854	
64th Foot	J. G. Inglis, M.D., C.B.	Surg.-Major.	29 Mar. 1859	East Indies.
do.	E. L. Lundy	Asst.-Surg.	7 April 1854	
do.	G. P. Wall	do.	19 Oct. 1857	
do.	C. E. Le Febure	do.	30 July 1855	
65th Foot	T. E. White, M.D.	Surgeon	2 Oct. 1857	New Zealand.
do.	A. Neill	Asst.-Surg.	15 Sept. 1857	
do.	E. McShane	do.	15 Sept. 1857	
66th Foot	W. S. Murray, M.B.	Surgeon	26 Jan. 1858	East Indies.
do.	W. Hemphill, M.D.	Asst.-Surg.	14 July 1854	
do.	J. McCrevey, M.D.	do.	22 Jan. 1858	
do.	G. A. Moorhead	do.	22 July 1858	
67th Foot	J. Lamprey, M.B.	Surgeon	3 Nov. 1857	China.
do.	A. C. Ross, M.D.	Asst.-Surg.	1 July 1853	
do.	R. Heard, M.D.	do.	15 Sept. 1857	
do.	J. G. S. Mathison	do.	5 Aug. 1858	
68th Foot	T. Best	Surgeon	13 April 1852	East Indies.
do.	A. P. M. Corbett, M.D.	Asst.-Surg.	2 Nov. 1854	
do.	C. Williams	do.	5 Jan. 1855	
	A. O. Applin	do.	3 Oct. 1857	

Regiment.	Name.	Rank.	Date of Appointment.	Station.
69th Foot	H. G. Gordon, M.D.	Surgeon	23 April 1858	East Indies.
do.	J. R. Crawford	Asst.-Surg.	2 April 1855	„
do.	J. H. Whittaker	do.	3 Oct. 1857	„
do.	F. Madden	do.	19 Oct. 1857	„
70th Foot	G. C. Meikleham, M.D.	Surgeon	28 Mar. 1854	East Indies.
do.	H. J. Rogers	Asst.-Surg.	16 June 1854	
do.	J. F. Deakin, M.D.	do.	28 July 1855	
do.	J. Watts	do.	5 April 1855	
71st Foot	W. Simpson, M.D.	Surgeon	8 Dec. 1854	East Indies.
do.	W. Leach	Asst.-Surg.	24 Nov. 1854	
do.	E. Wilson	do.	19 May 1855	
do.	J. Warren	do.	9 Nov. 1857	
72nd Foot	W. C. Seaman, M.D.	Surgeon	16 May 1851	East Indies.
do.	T. W. Rutter, M.D.	Asst.-Surg.	9 June 1854	
do.	G. McG. Carolan	do.	23 Dec. 1854	
do.	M. J. Jones	do.	15 Feb. 1855	
73rd Foot	E. Booth	Surgeon	13 Feb. 1852	East Indies.
do.	R. T. Scott	Asst.-Surg.	8 Dec. 1857	
do.	J. Anderson, M.B.	do.	10 Mar. 1858	
do.	J. McKinnel, M.D.	do.	22 April 1858	
74th Foot	J. Macbeth, M.D.	Surgeon	12 Aug. 1853	East Indies.
do.	W. R. Birkitt	Asst.-Surg.	17 April 1855	
do.	A. Chester	do.	1 Aug. 1857	
do.	R. Gillespie, M.D.	do.	1 Sept. 1858	
75th Foot	R. Dominichetti, M.D.	Surgeon	10 June 1857	East Indies.
do.	H. Reid, M.D.	Asst.-Surg.	8 Dec. 1857	
do.	C. W. Semple	do.	22 April 1858	
do.	R. Woods	do.	13 Oct. 1858	
76th Foot	R. T. Scott	Surg.-Major	1 Oct. 1858	Dublin.
do.	D. A. C. Fraser, M.D.	Asst.-Surg.	28 Oct. 1853	
do.	J. Macartney	do.	9 June 1854	
77th Foot	T. Rhys	Surgeon	20 July 1855	East Indies.
do.	A. Humfrey	Asst.-Surg.	7 April 1854	
do.	G. C. Hyde	do.	17 Jan. 1855	
do.	T. N. Hoysted	do.	28 Sept. 1855	
78th Foot	J. Jee, C.B. V. C.	Surgeon	23 June 1854	Fort George
do.	*V.C.*, V. M. McMaster	Asst.-Surg.	27 Mar. 1855	
do.	S. S. Skipton, M.D.	do.	9 June 1854	
79th Foot	T. G. Soot, M.D.	Surgeon.	18 Feb. 1853	East Indies.
do.	A. K. Drysdale	Asst.-Surg.	24 Mar. 1854	
do.	P. Kilgour	do.	17 Jan. 1855	
do.	G. S. Davie, M.D.	do.	1 Nov. 1858	
80th Foot	J. A. W. Thompson, M.D.	Surgeon	26 Feb. 1856	East Indies.
do.	P. Frank, M.D.	Asst.-Surg.	14 Dec. 1854	
do.	W. Jackson	do.	9 Nov. 1857	
do.	J. Inkson, M.D.	do.	19 Oct. 1857	
81st Foot	G. Auchinleck, M.D.	Surgeon	2 Oct. 1857	East Indies.
do.	H. Bicknell	Asst.-Surg.	16 May 1855	
do.	W. H. Corbett, M.D.	do.	15 Dec. 1854	
do.	W. J. Mullan	do.	15 Sept. 1857	
82nd Foot	H. D. Fowler	Surgeon	20 July 1855	East Indies.
do.	R. W. Carter	Asst.-Surg.	28 July 1854	
do.	W. H. Muschamp	do.	23 Jan. 1855	
do.	R. Spence	do.	24 Mar. 1858	
83rd Foot	R. Browne	Surgeon	14 July 1856	East Indies.
do.	W. Sharpe	Asst.-Surg.	3 Feb. 1855	
do.	T. R. Mould	do.	31 May 1857	
do.	E. O'Connell	do.	22 Sept. 1858	
84th Foot	J. McG. Grant, M.D.	Surgeon	29 Nov. 1850	Sheffield.
do.	H. P. Gregory	Asst.-Surg.	19 Oct. 1857	
do.	W. H. Jenkins	do.	24 Sept. 1855	
85th Foot	J. W. Johnston, M.D.	Surgeon	29 June 1855	C. of G. Ho
do.	H. C. Herbert	Asst.-Surg.	15 Sept. 1857	
do.	N. Norris	do.	2 April 1855	

Regiment.	Name.	Rank.	Date of Appointment.	Station.
86th Foot	J. Sawyers, M.D.	Surgeon	26 Jan. 1858	Portsmouth.
do.	T. S. Barry	Asst.-Surg.	22 Feb. 1855	
do.	E. C. Ryall	do.	22 Sept. 1854	
87th Foot	R. G. D. Banon	Surgeon	1 July 1858	East Indies.
do.	D. C. McFall	Asst.-Surg.	15 Sept. 1857	
do.	P. B. Smith, M.D.	do.	15 Sept. 1857	
do.	J. Collins, M.D.	do.	24 Nov. 1858	
88th Foot	A. H. Fraser	Surgeon	26 Jan. 1858	East Indies.
do.	T. R. Williams, M.B.	Asst.-Surg.	24 Mar. 1854	
do.	R. W. Meade	do.	1 Sept. 1854	
do.	J. C. Knipe	do.	14 Mar. 1855	
89th Foot	R. Gilborne	Surgeon	8 Dec. 1854	East Indies.
do.	J. Bonnyman, M.B.	Asst.-Surg.	13 Dec. 1855	
do.	W. H. Price	do.	26 May 1854	
do.	T. Walsh	do.	13 Oct. 1858	
90th Foot	P. J. Clarke	Surgeon	11 May 1855	East Indies.
do.	E. J. Crane	Asst.-Surg.	18 Aug. 1857	
do.	G. B. Popplewell	do.	9 June 1854	
do.	C. G. Lumsden	do.	28 May 1857	
91st Foot	M. W. Murphy	Surgeon	3 Mar. 1854	East Indies.
do.	R. Watson	Asst.-Surg.	26 May 1854	
do.	H. M. Macbeth	do.	22 June 1858	
do.	J. McL. Marshall	do.	1 Sept. 1858	
92nd Foot	T. B. Reid	Surgeon	5 Oct. 1858	East Indies.
do.	S. B. Roe, M.B.	Asst.-Surg.	4 Aug. 1855	
do.	D. S. Skinner	do.	28 Sept. 1857	
do.	J. Landale, M.D.	do.	15 Sept. 1857	
93rd Foot	W. Munro, M.D.	Surgeon	5 May 1854	East Indies.
do.	W. Sinclair	Asst.-Surg.	2 Sept. 1853	
do.	R. Menzies	do.	24 Feb. 1854	
do.	J. N. Bell, M.D.	do.	1 April 1853	
94th Foot	A. A. Stoney	Surgeon	11 May 1855	East Indies.
do.	E. McGrath	Asst.-Surg.	1 Aug. 1857	
do.	J. G. Leask, M.B.	do.	28 Aug. 1855	
do.	J. Wallace	do.	2 June 1857	
95th Foot	H. M. Webb, M.B.	Surgeon	8 Dec. 1854	East Indies.
do.	J. Clarke	Asst.-Surg.	13 Dec. 1853	
do.	R. A. Elliott	do.	30 May 1857	
do.	W. Sharpe	do.	6 July 1855	
96th Foot	B. Swift, M.D.	Surgeon	13 Jan. 1854	Manchester.
do.	H. Mitchell	Asst.-Surg.	21 July 1854	
do.	J. J. Mulock	do.	5 May 1854	
97th Foot	A. Macrae, M.D.	Surgeon	26 Jan. 1858	East Indies.
do.	J. H. Porter	Asst.-Surg.	17 June 1858	
do.	E. M. Sinclair, M.D.	do.	28 Mar. 1854	
do.	T. Sharkey	do.	1 Aug. 1857	
98th Foot	N. H. Stewart, M.D.	Surgeon	22 June 1855	East Indies.
do.	J. McN. Beatty	Asst.-Surg.	14 Dec. 1854	
do.	W. Collis	do.	14 Sept. 1855	
do.	S. Archer	do.	5 Aug. 1858	
99th Foot	R. C. Todd	Surgeon.	3 Nov. 1857	East Indies.
do.	G. Whitla	Asst.-Surg.	15 Sept. 1857	
do.	J. W. G. Allen	do.	12 Nov. 1857	
do.	S. H. Macartney, M.D.	do.	5 Aug. 1858	
100th Foot	W. Barrett, M.B.	Surgeon	28 Mar. 1854	Gibraltar.
do.	T. Liddard	Asst.-Surg.	3 Oct. 1857	
do.	D. Murray, M.D.	do.	19 Oct. 1857	
Rifle Brig. 1 Bat.	R. Bowen	Surgeon	26 Dec. 1851	Portsmouth.
do. do.	J. J. P Williams	Asst.-Surg.	14 July 1854	
do. do.	F.S.B.F.deChaumont, M.D.	do.	28 April 1854	
do. 2nd Bat,	H. M. Fraser, M.D.	Surgeon	2 Oct. 1857	East Indies.
do. do.	J. B. C. Reade	Asst.-Surg.	24 Mar. 1854	
do. do.	A. F. Bradshaw	do.	27 May 1857	
do. do.	D. R. Pearson, M.D.	do.	12 Jan. 1859	

Regiment.	Name.	Rank.	Date of Appointment.	Station
Rifle Brig. 3rd B.	J. T. La Presle ..	Surgeon	2 Oct. 1857	East Indies.
do. do.	A. Guthrie, M.D. ..	Asst.-Surg.	28 April 1854	
do. do.	J. Storey	do.	7 Dec. 1855	
do. do.	D. Cullen, M.D... ..	do.	1 Sept. 1854	
do. 4th Bat.	J. E. Scott, M.D. ..	Surgeon	9 Feb. 1855	Malta.
do. do	G. Baly	Asst.-Surg.	4 April 1855	
do. do.	C. Seward	do.	22 April 1858	
1st W. I. Regt.	J. Davys	Surgeon	4 Sept. 1857	Bahamas.
do.	F. M. Skues	Asst.-Surg.	28 Feb. 1855	
do.	J. Kelly	do.	17 July 1855	
do.	P. B. Kearney	do.	1 Nov. 1858	
2nd W. I. Regt.	R. E. Fitzgibbon ..	Surgeon	22 July 1856	Jamaica.
do.	C. Bagot, M.B.	Asst.-Surg.	15 Sept. 1857	
do.	C. F. S. Macauley ..	do.	1 Mar. 1859	
do.	G. H. Harris	do.	22 June 1858	
3rd W. I. Regt.	D. W. Eaton	Surgeon	11 May 1855	West Indies.
do.	J. G. Richardson ..	Asst.-Surg.	10 Mar. 1858	
do.	H. D. Massy	do.	10 Mar. 1858	
do.	W. B. Carbery	do.	5 Aug. 1858	
Ceylon Rifles ..	H. L. Cowen	Surgeon	5 May 1854	Ceylon.
do.	J. J. Thompson	Asst.-Surg.	14 July 1854	
do.	E. G. Noott	do.	10 Feb. 1854	
Cape Mounted Rifles ..	A. G. Montgomery ..	Surgeon	2 Oct. 1857	C. of G. Hope.
do.	E. L'Estrange, M.D. ..	Asst.-Surg.	15 Sept. 1857	
do.	H. Knaggs	do.	22 April 1858	
Royal Canadian Rifles ..	J. Rambaut, M.D. ..	Surgeon	20 July 1855	Canada.
do.	R. W. Meadows.. ..	Asst.-Surg.	26 May 1854	
St. Helena Regt.	J. Mullins	Surgeon	6 Oct. 1854	St. Helena.
do.	J. Jardine, M.D. ..	Asst.-Surg.	15 Dec. 1854	
Ryl. Newfoundland Corps ..	W. M. Skues, M.B. ..	Asst.-Surg.	29 July 1853	Newfoundland.
Royal Malta Fencibles ..	L. Bernard, M.D. ..	Surgeon	9 May 1849	Malta.
do.	C. Ellul, M.D.	Asst.-Surg.	9 Aug. 1849	
Depôt Battalions.				
1st Depôt Bat.	A. Maclean, M.D. ..	Surg.-Major.	1 Oct. 1853	Chatham.
5th do. do.	J. T. O. Johnston, M.D.	do.	1 Oct. 1858	Parkhurst.
21st do. do.	A. Gibb, M.D.	Surgeon	11 Sept. 1849	Chichester.

CHANGES DURING THE YEAR 1859.

No. of Medical Officers on Full-Pay on 1st January, 1859		1,063
Entries of Assistant-Surgeons in 1859		90
Deaths of Medical Officers in 1856, viz.:—Surgeons	8	
Assistant-Surgeons	12	
	—	20
Retirements on Half-Pay in 1859, viz.:—		
Inspectors-General, under Article 10 of Warrant of 1st October, 1858	2	
Deputy Inspectors-General: Under Articles 10 and 11 of do. ..	1	
Under Article 12 of do. ..	1	
Surgeons-Major .. .. : Under Article 10 of do. ..	2	
Under Articles 10 and 11 of do. ..	3	
Under Article 12 of do· ..	1	
Surgeons—Temporary Half-Pay from ill-health	3	
Assistant-Surgeons—Temporary Half-Pay from ill-health	1	
	—	14
Resignations of Medical Officers in 1859, viz.:—Assistant-Surgeons		6
Dismissals of Medical Officers in 1859, viz.:—Assistant-Surgeons		3
No. of Medical Officers on Full-Pay on 31st December, 1859		1,075

APPENDIX TO MEDICAL REPORT FOR 1859.

List of Articles fitted and Works performed on board the Steam-ship "Melbourne," Regular Transport, at Deptford, between the 8th of December, 1859, and the 6th of January, 1860. Per Contract, dated 20th June, 1857, and Letter of Comptroller of Transport Service, of 29th November, 1859.

No. of Articles.	Species.	Quantity.	Rate.	Value.
			£ s. d.	£ s. d.
S. S.	Sleeping berths, in one tier—	persons	per person	
1	1 each, 6 x 2·3, containing 1 in each ..	1	0 11 8	0 11 8
	Sleeping berths, in two tiers—			
5	2, each 6 x 2·3, containing 1 in each ..	2	0 9 4	0 18 8
		No.	each	
19	Corner washstands, with 2 sides	1	0 5 0	0 5 0
20	Door or lid to ditto	1	0 1 11	0 1 11
22	Step ladders	3	0 10 9	1 12 3
		feet	per foot	
27	Benches in midships	282	0 0 6	7 1 0
29	Mess, tables, fixed midships	468·6	0 0 6¾	13 3 6¼
		No.	each	
34	Hammock-hooks	1,086	0 0 4	18 2 0
		ft. in.	per foot	
38	Screen battens	14 ·6	0 0 2¼	0 2 8½
		No.	each	
39	Knapsack hooks	950	0 0 1¼	4 18 11½
		feet	per foot	
45	Bulkhead, wrought	366	0 0 4	6 2 0
		muskets	per musket	
71	Arm racks	216	0 0 3½	3 3 0
		No.	each	
74	Upper deck privies, double..	6	7 5 6	43 13 0
80	Urinals, lined with lead	1	1 15 6	1 15 6
81	Air tubes, fitted	26	0 6 6	8 9 0
87	Air funnels, fitted	4	0 13 0	2 12 0
91	Stout trunks to air tubes	6	1 0 0	6 0 0
		letters	per letter	
94	Writing	267	0 0 0½	0 11 1½
		feet	per foot	
96	Grating bulkhead	238	0 0 4½	4 9 3
		No.	each	
97	Doors fitted in grating bulkhead	2	0 4 0	0 8 0
		feet	per foot	
101	Guard battens and stanchions to hatchway	282	0 0 4	4 14 0
		No.	each	
108	Iron screw-bolts to air tubes	104	0 0 8	3 9 4
	Sleeping berths in hospital, in one tier—	persons	per person	
112	120, each 6 x 2·3, containing 1 in each ..	120	0 17 6	105 0 0
	Sleeping berths in hospital, in two tiers—			
113	20, each 6 x 2·3, containing 1 in each ..	20	0 16 6	16 10 0
M. C. S.		No.	each	
40	Hanging tables for Surgeon	3	0 5 6	0 16 6
			£	254 10 4¾

Fitting Steam-ship "Melbourne"—*continued.*

Species.	Quantity.	Rate.			Value.		
		£	s.	d.	£	s.	d.
WORKS NOT SPECIFIED IN CONTRACT.							
	No.	each					
Additional cost of hospital sleeping berths built, 6·3 × 2·6 instead of 6 × 2·3, fitted with additional depth of parting-board to the berths built amidships, and additional depth of head and foot-board to all the berths, and making all the parting and lee-boards to slip in grooves	120	0	9	6	57	0	0
Additional cost of galvanizing iron bed-bottoms instead of painting ditto	140	0	1	6	10	10	0
Swinging trays of 1-inch deal, with battens round ditto, including suspending lines, and fitting ..	120	0	2	9	16	10	0
Turned handles, with lanyards..	120	0	0	6	3	0	0
Iron rings for chamber utensils, with flat parts made to screw to stanchions, and galvanizing ditto ..	120	0	1	6	9	0	0
	gross	per gross					
Screws for ditto put on board	3½	0	3	0	0	10	6
	No.	each					
Hooks put in deck for swinging-trays and lifting handles	240	0	0	1½	1	10	0
Knapsack-racks under berths	120	0	3	0	18	0	0
Upper Deck.							
	feet	per foot					
1½-Inch deal, top of butchery and drying room ..	110	0	0	2½	1	2	11
1 do. front and ends of ditto	334	0	0	1¾	2	8	8½
½ do. battens behind zinc	12	0	0	1¼	0	1	3
Fir quarter, 2½ × 3, cants	130	0	0	1¼	0	13	6½
Do. 3 × 3, stanchions, &c.	70	0	0	1½	0	8	9
Teak do. 1 × 1½, runners for doors	22	0	0	1	0	1	10
3-Inch English elm plank, butcher's block	9	0	0	9	0	6	9
Danzic Fir quartering, 3 × 3, do.	16	0	0	2	0	2	8
	No.	each					
Large meat hooks	12	0	0	1½	0	1	6
	cwt.	per cwt.					
18 Sheets zinc, lining drying room	2·2·23	1	9	0	3	18	6
	feet	per foot					
1½-Inch deal, top of ablution room	120	0	0	2½	1	5	0
1 do. front, back, and ends of ditto	232	0	0	1¾	1	13	10
Fir quartering, 3 × 3, ditto	70	0	0	1½	0	8	9
Do. 2½ × 3, ditto	82	0	0	1¼	0	8	6½
1½-Inch deal trough, in ablution room	42	0	0	2½	0	8	9
1½-Inch English elm, ditto	2·6	0	0	4½	0	0	11¼
Fir quarter 3 × 3, trough in ablution room	6	0	0	1½	0	0	9
	No.	each					
Elm cleats	3	0	0	2	0	0	6
	feet	per foot					
Fir quartering, 1½ × 1½, grating in ditto	64	0	0	0¾	0	4	0
½-Inch fir board, ditto	12	0	0	1¼	0	1	3
Plumbers, lining long washing trough with lead, fixing waste pipe to ditto, lead, solder, and labour ..	..	..			3	14	0
1½-Inch deal top of washing house	120	0	0	2½	1	5	0
1 do. front and ends of ditto	232	0	0	1¾	1	13	10
Fir quarter, 2½ × 3, cants	82	0	0	1¼	0	8	6½
Do. 3 × 3, stanchions	70	0	0	1½	0	8	9
1-Inch deal, front and ends of bakery..	216	0	0	1¾	1	11	6
1 do. fittings in ditto	36	0	0	1¾	0	5	3
1½ do. top and fittings in ditto	78	0	0	2½	0	16	3
Fir quartering, 2½ × 3, ditto	54	0	0	1¼	0	5	7½
Do. 3 × 3, ditto	64	0	0	1½	0	8	0
1½-Inch deal, put on board for cooking-house and hearth-stand	144	0	0	2½	1	10	0
1-Inch deal, ditto	220	0	0	1¾	1	12	1
Fir quartering, 3 × 3, ditto	108	0	0	1½	0	13	6
Do. 3 × 2½, ditto	48	0	0	1¼	0	5	0

Fitting Steam-ship "Melbourne"—*continued.*

Species.	Quantity.	Rate.	Value.
		£ s. d.	£ s. d.
Fir arris, 3-inch	feet 48	per foot 0 0 1	0 4 0
35 Sheets of iron	cwt. 4·2·15	per cwt. 0 17 6	4 1 1
Dog nails..	lbs. 24	per lb. 0 0 5	0 10 0
Oakum, caulking tops of houses	cwt. 0·0·20	per cwt. 1 2 0	0 3 11
Pitch	0·1·0	0 7 0	0 1 9
Oil	pint 1	per pint 0 0 5	0 0 5
Caulker's labour: caulking tops of deck houses ..	..	..	0 18 0
A 4-foot cooking apparatus, with hot plate and covers, 2 ovens and shelves, rails, roasting pans and stands, 1 extra large square galvanized iron boiler, with brass cock, to stand on hot plate	..	..	20 0 0
Brazil iron baking pans with handles	No. 24	each 0 4 0	4 16 0
Large oven, with double doors, shelves, &c., for baker	1	10 0 0	10 0 0
A 3-foot cooking apparatus, with double boiler and cock for potatoes and water, galvanized cooking apparatus with boilers and brass cocks galvanized	2	8 0 0	16 0 0
12-Gallon square galvanized boilers, with cocks, to stand on hot plate	2	1 5 0	2 10 0
3-Inch cast raised deck flanges and screws for hot air pipes	2	0 3 6	0 7 0
Making 2 brazed iron flanges for air pipes, drilling and cutting 2 holes in back of hearth and fixing ditto with screw bolts and nuts	..	..	0 15 6
Spare set of bars for 4-foot cooking apparatus ..	cwt. 0·1·12	per cwt. 0 18 0	0 6 5
Making square rivetted iron funnel-pipe, with 4 branches and elbows for apparatus, baker's oven, and potato boiler, carrying ditto into ship's funnel, fixing ditto on board, bolting down apparatus and oven to iron deck	..	..	2 10 0
Set of fire-irons for hot-plate apparatus	No. 1	each 0 6 0	0 6 0
Do. for fire hearths	2	0 4 0	0 8 0
Set of plate iron funnels for ditto	2	0 11 9	1 3 6
Iron baking pan and stand	1	0 5 0	0 5 0
Making 2 lengths of 3½-inch iron pipe, and 4 bevelled elbows for foul-air pipes, fixing ditto to apparatus, trying and taking down ditto	..	..	1 4 6
Strong square tin pans to fit baker's oven	24	0 5 6	6 12 0
Smiths: altering wrought iron galley, cutting out rivets, and taking down plates and refixing ditto, cutting off 8 plates, drilling 64 holes, and punching 84 ditto, 200 new rivets, shortening 1 iron door, repairing 1 plate and 2 studs for hasps, 2 new plates for locks, 7 lbs., and fixing, cutting out 2 4-in. round holes for pipes	..	..	4 0 0
Poop.			
1½-Inch deal, altering door to cabin	feet 24	per foot 0 0 2½	0 5 0
¾ do. do.	6	0 0 1½	0 0 9
Filling-in part of skylight over cuddy with stout zinc for air funnels to poop, through, including labour, solder, and nails	..	..	0 9 10
2-Inch deal, widening officers' berths	36	0 0 3½	0 10 6
1½ do. drawers over stern lockers	14	0 0 2½	0 2 11
1¼ do. do. do.	18	0 0 2¼	0 3 4½
1 do. do. do.	12	0 0 1¾	0 1 9
¾ do. do. do.	66	0 0 1½	0 8 3
½ do. do. do.	24	0 0 1¼	0 2 9

Fitting Steam-ship "Melbourne"—*continued.*

Species.	Quantity.	Rate.			Value.		
		£	s.	d.	£	s.	d.
Between Decks.—Surgery.							
	feet	per foot					
1½-Inch deal, platform over hatchway	185	0	0	2½	1	18	6½
¾ do. lining ditto	185	0	0	1½	1	3	1½
1 do. inclosure of surgery	460	0	0	1¾	3	7	1
Fir quarter, 3 × 3, stanchions do.	112	0	0	1½	0	14	0
¾-Inch deal, lining do.	60	0	0	1½	0	7	6
	No.	each					
Elm cleats	20	0	0	2	0	3	4
	feet	per foot					
1½-Inch deal, dresser in surgery	66	0	0	2½	0	13	9
1¼ do. drawers, &c., do.	48	0	0	2¼	0	9	0
1 do. do. do.	48	0	0	1¾	0	7	0
¾ do. do. do.	168	0	0	1½	1	1	0
⅝ do. do. do.	24	0	0	1½	0	3	0
½ do. do. do.	168	0	0	1¼	0	17	6
1 do. shelves for bottles, &c.	60	0	0	1¾	0	8	9
¾ do. do. do.	46	0	0	1½	0	5	9
2 do. water table to skylight	3	0	0	3½	0	0	10½
	No.	each					
Swinging candle-lamps, 7*s.* 6*d.*, and spare glasses, 9*d.*	4 of each	0	8	3	1	13	0
Galvanized slop-pails	1	0	5	0	0	5	0
Enamelled wash-hand basin, with plug and chain	1	0	7	0	0	7	0
Enamelled soap tray	1	0	1	4	0	1	4
Jointed galvanized iron ring to fix ditto, with double joint and stop	1	0	5	3	0	5	3
	feet	per foot					
1-Inch deal, cart for sponges, water bottles, pails, &c.	18	0	0	1¾	0	2	7½
¾ do. do. do. do.	6	0	0	1½	0	0	9
1½ do. elm do. do. do.	3	0	0	4½	0	1	1½
2 Axle-trees, bushes for wheels, &c.	..	..			0	9	0
	No.	each					
Zinc-water bottles	2	0	2	9	0	5	6
Strong painted pail for ditto	1	0	4	6	0	4	6
Strong painted wash-hand basin, with brass plug	1	0	4	6	0	4	6
3-Gallon japanned water jugs	2	0	6	9	0	13	6
	doz. lbs.	per doz. lbs					
Palmer's patent wax candles	12	0	12	6	7	10	0
	No.	each					
Cases for ditto	2	0	2	6	0	5	0
Camp stools	24	0	3	6	4	4	0
Canvas screens	..	..			0	4	2
	feet	per foot					
1-Inch deal, shutters to air funnel	6	0	0	1¾	0	0	10½
Fir quarter, 3 × 2, do.	8	0	0	1¼	0	0	10
Do. 1½ × 1½, cants on deck in way of ports	160	0	0	0¾	0	10	0
Orlop Deck							
1-Inch deal, lockers, drawers, issuing dressers, &c., in store room	496	0	0	1¾	3	12	4
¾-Inch deal, ditto	108	0	0	1½	0	13	6
Fir quartering, 2½ × 3, clothes racks	180	0	0	1¼	0	18	9
Do. battens, 1 × 4, do.	444	0	0	1	1	17	0
Do. ½ × 3, do.	120	0	0	0½	0	5	0
Do. 3½ × 1, knapsack rack	1,643	0	0	1	6	16	11
Fir quarter, 3 × 2, do.	66	0	0	1	0	5	6
Do. 3 × 3, do.	12	0	0	1½	0	1	6
	No.	each					
Double wicker knife trays, lined with tin	4	0	8	6	1	14	0
Do. large plate baskets	3	0	7	6	1	2	6
Brass hooks	12	0	0	1½	0	1	6
Jointed seat-irons, shifting benches	36	0	1	9	3	3	0
Bolts and nuts	24	0	0	2½	0	5	0
Buckles for seat irons	34	0	0	1½	0	4	3
Pins with chains for ditto	48	0	0	2	0	8	0

Fitting Steam-ship "Melbourne"—*continued.*

Species.	Quantity.	Rate.			Value.		
		£	s.	d.	£	s.	d.
	No.	each					
Stay hooks and staples, 3-inch	22	0	0	1½	0	2	9
	lbs.	per lb.					
Iron bolts for shifting tables	38	0	0	1½	0	4	1½
	pairs	per pair					
Brass butt-hinges and screws for skylight	2	0	0	9	0	1	6
	No.	each					
Padlocks	8	0	0	8	0	5	4
Ditto	6	0	0	9	0	4	6
Hasps and staples	14	0	0	3½	0	4	1
	doz.	per doz.					
Staples, large	3	0	0	9	0	2	3
Do. small	11½	0	0	6	0	5	9
	pairs	per pair					
Back flap hinges and screws	3	0	1	2	0	3	6
Cross garnet hinges and screws, 20 inches	4	0	1	6	0	6	0
Do. do. 18 inches	6	0	1	4	0	8	0
	sheets	per sheet					
Tin for lining lockers	150	0	0	2¼	1	8	1½
	M.	per M.					
Wrought tacks for ditto	3	0	1	4	0	4	0
	doz.	per doz.					
Screws, 1½-inch	12	0	0	2¼	0	2	3
Do. 3-inch	6	0	0	6	0	3	0
Do. do.	4	0	1	0	0	4	0
Line hooks	12	0	0	7	0	7	0
Necked bolts and screws, 4-inch	10	0	0	5½	0	4	7
Buttons and screws	3	0	0	2	0	0	6
	lbs.	per lb.					
Punched hooped iron	4	0	0	2½	0	0	10
	No.	each					
Screw eyes	4	0	0	4	0	1	4
	cwt.	per cwt.					
Iron hand-rails to ladders, with straps and sockets ..	0·3·2	1	15	0	1	6	10½
	No.	each					
Screw bolts for ditto	8	0	0	3	0	2	0
Drawer handles	32	0	0	2¼	0	6	0
Ditto	10	0	0	2	0	1	8
	doz.	per doz.					
Screws for ditto, ¾-inch	12	0	0	1	0	1	0
	No.	each					
6-Inch tower bolts and screws	2	0	0	6	0	1	0
Shutter bolts, 12-inch	2	0	1	0	0	2	0
Square-headed coach screws	6	0	0	2½	0	1	3
12-Inch stay hooks and staples for skylight	2	0	0	6	0	1	0
3-Inch solid ward dead locks, with 2 keys to each ..	4	0	4	6	0	18	0
6-Inch iron rim locks complete	2	0	2	9	0	5	6
Brass drawer locks	5	0	0	10	0	4	2
Square-headed coach screws, 18 at 2*d.*, 4 at 2½*d.*, and 5 at 4*d.*	..	..			0	5	6
Nails, 2,525 at 2*d.*, 5,200 at 3*d.*, 6,050 at 3½*d.*, 7,500 at 5*d.*, 9,250 at 8*d.*, 800 at 1*s.*	..	..			6	15	9
Lengthening iron funnels	..	..			1	15	10
	hundred	per hundred					
Clout nails	14	0	0	2	0	2	4
	No.	each					
Screw ring-bolts	8	0	0	3	0	2	0
Robert's patent stove	1	1	10	0	1	10	0
10-Foot iron funnel, and elbows for ditto	1	0	7	0	0	7	0
Stand for ditto, lined with lead	1	0	7	0	0	7	0
Case for ditto	..	..			0	4	6
Making and fixing zinc pipes between decks, with funnel heads to fit iron deck flanges, to draw off foul air from between decks	..	..			2	0	0
Perforated zinc, hospital, &c.	96	0	0	6	2	8	0
Ditto, fire, butchery, &c.	24	0	0	5	0	10	0
	lbs.	per lb.					
Candles	20	0	0	7½	0	12	6

Fitting Steam-ship "Melbourne"—*continued.*

Species.	Quantity.	Rate.	Value.
		£ s. d.	£ s. d.
Joiners' Labour: building ablution room, making and fixing washing trough in ditto; building drying house, butcher's house, wash-house and bakery, on upper deck; fitting sliding and hanging doors and shutters to all the deck-houses; putting on locks and fastenings; making butcher's block; putting in hooks, &c.; fitting up bakery with dresser, shelves, &c.; lining drying-house with zinc; making stands for boilers, and lining ditto with sheet iron; cutting perforations in doors of officers' water-closets on quarter deck; enlarging sleeping berths (sick officers' cabins) in poop; removing furniture from mate's cabin for agent, and fixing ditto in another cabin; taking down and refitting sleeping berth, wash-hand stand, &c., in principal medical officer's cabin; altering doors, putting in locks, &c., in cabins; building chests of drawers over stern-lockers for linen; building surgery between decks, with folding doors on each side; laying platform over hatchway; fitting up surgery with dressers, and drawers under ditto, shelves, bottle-racks, &c.; casing iron spindles, and fitting sliding shutters under air funnels; fitting up store-room on orlop deck with lockers, drawers, clothes racks, issuing dresser, &c., lining lockers with tin; building rack on orlop deck for knapsacks, and putting up fittings for knives, &c.; fitting ship's ladders in place, fitting iron hand-rails to ladders, &c.	..	..	54 13 6
Railway, lodging, and allowance to men working at Woolwich	..	..	5 0 0
Waterage, waterman, and craft cartage for above work	..	..	6 10 0
Labourers assisting to load and unload craft	..	..	1 15 0
Painting deck-houses outside 2 coats; painting surgery inside and out, numbering berths, &c... ..	..	..	2 15 0
Stores put on board.			
Galvanized iron bed bottoms	No. 12	each 0 9 6	5 14 0
Fir quarter, 3 × 3, spare stanchions planed and rounded	feet 84	per foot 0 0 2	0 14 0
1-Inch deal, spare side boards, ditto	84	0 0 2	0 14 0
Elm stanchion-cleats and nails, in case	No. 100	each 0 0 2	0 16 8
		£	684 18 4¼

LIST of Articles fitted and Work performed at Deptford, on board the Steamship "Mauritius," Regular Transport, between the 15th of December, 1859, and the 11th of January, 1860. Per Contract, dated 20th June, 1857, and Letter of Comptroller of Transport Service, of 1st December, 1859.

No. of Articles.	Species.	Quantity.	Rate.			Value.		
			£	s.	d.	£	s.	d.
S. S.	Sleeping berths, in two tiers—	persons	per person					
5	8, each 6 × 2·3, containing 1 in each ..	8	0	9	4	3	14	8
7	6, each 6 × 3, containing 2 in each ..	12	0	5	2	3	2	0
		No.	each					
22	Step ladders	6	0	10	9	3	4	6
		feet	per foot					
24	Lining to ladders	24	0	0	3	0	6	0
25	Side benches	12	0	0	4¼	0	4	3
27	Benches in midships	457	0	0	6	11	8	6
29	Mess tables in midships	645	0	0	6¾	18	2	9¾
		No.	each					
43	Hammock-hooks	1,108	0	0	4	18	9	4
		feet	per foot					
37	Accoutrement battens	950	0	0	1¾	6	18	6½
38	Screen battens	12	0	0	2¼	0	2	3
		No.	each					
39	Knapsack-hooks	1,291	0	0	1¼	6	14	5¾
		feet	per foot					
45	Bulkhead, wrought	632	0	0	4	10	10	8
		muskets	per musket					
72	Arm stands..	216	0	0	6	5	8	0
		No.	each					
74	Upper deck privies, double	8	7	5	6	58	4	0
80	Urinals, lined with lead	2	1	15	6	3	11	0
81	Air tubes, fitted	10	0	6	6	3	5	0
87	Air funnels, fitted	10	0	13	0	6	10	0
91	Stout trunks to air tubes	6	1	0	0	6	0	0
		letters	per letter					
94	Writing	488	0	0	0½	1	0	4
		feet	per foot					
96	Grating bulkhead	558	0	0	4½	10	9	3
		No.	each					
97	Doors fitted in grating bulkhead	5	0	4	0	1	0	0
		feet	per foot					
101	Guard battens and stanchions to hatchway	352	0	0	4	5	17	4
		No.	each					
108	Iron screw bolts and nuts	40	0	0	8	1	6	8
	Hospital sleeping berths, in one tier—	persons	per person					
112	36, each 6 × 2·3, containing 1 in each ..	36	0	17	6	31	10	0
	Hospital sleeping berths, in two tiers—							
113	168, each 6 × 2·3, containing 1 in each ..	168	0	16	6	138	12	0
M.C.S.		feet	per foot					
58	Benches, portable	36	0	0	7½	1	2	6
						£356	14	1

Fitting Steam-Ship "Mauritius"—*continued.*

Species.	Quantity.	Rate. £ s. d.	Value. £ s. d.
WORKS NOT SPECIFIED IN CONTRACT.			
Additional cost of hospital sleeping berths, built 6·3 × 2·6 instead of 6 × 2·3, fitted with additional depth of parting board to the berths built amidships, and additional depth of head and foot-boards to all the berths, and making all the parting and lee-boards to slip in grooves	No. in 1 tier 36	each 0 9 6	17 0 2
Do. do. do. do.	No. in 2 tiers 168	each 0 8 3	69 6 0
Additional cost of galvanizing iron bed-bottoms instead of painting ditto	No. 204	each 0 1 6	15 6 0
Knapsack-racks under berths	36	0 3 0	5 8 0
Swinging-trays of 1-inch deal, with batten round edge, including lines for suspending	200	0 2 9	27 10 0
Turned handles, with lanyards	200	0 0 6	5 0 0
Galvanized iron rings for securing chamber utensils, made with flat parts to screw to stanchions ..	230	0 1 6	17 5 0
Screws for do., put on board	gross 6½	per gross 0 3 0	0 19 6
Screw-hooks put in deck for swinging-trays and lifting handles	No. 248	each 0 0 1½	1 11 0
Upper Deck.			
1-Inch deal, butcher's house	feet 189	per foot 0 0 1¾	1 7 6¾
1½ do. top of do.	96	0 0 2½	1 0 0
½ do. battens for do.	24	0 0 1¼	0 2 6
Fir quarter, 3 × 3, stanchions, &c., do.	96	0 0 1½	0 12 0
Do. 3 × 6, beams for do.	8	0 0 3	0 2 0
3-Inch English elm plank, butcher's block	9	0 0 9	0 6 9
Dantzic fir quarter, 3 3, do.	16	0 0 2	0 2 8
Lengthening air funnels, and scraping, cleaning, and repairing do.; 10 new forged hoops rivetted on do.	No. 10	each 0 10 6	5 5 0
Making and fitting canvas coats to air pipes	10	0 6 5	3 4 2
Cast-iron deck flanges for do.; cutting air pipes and fitting cowls to flanges	6	0 11 8	3 10 0
18-Inch cast-iron deck flange for large air pipe, 14 screw bolts and nuts fixing do.	1	0 18 0	0 18 0
Making 18-inch wrought-iron air-pipe, and wrought-iron flange for between-decks, and pipe with bell-mouth for upper deck	1	4 15 0	4 15 0
Hair-felt for deck flange	sheets 16	per sheet 0 0 5	0 6 8
White lead	cwt. 0·2·0	per cwt. 1 8 0	0 14 0
1½-Inch deal, circular cants to air funnels	feet 28	per foot 0 0 2½	0 5 10
Cuddy.			
1½-Inch deal, widening sleeping berths in officers' cabins	36	0 0 2½	0 7 6
Surgery:—Between Decks.			
1-Inch deal, inclosing surgery	572	0 0 1¾	4 3 5
Fir quarter, 3 × 3, stanchions do.	128	0 0 1½	0 16 0
Elm cleats do.	26	0 0 2	0 4 4
1½-Inch deal, dresser top, &c.	128	0 0 2½	1 6 8
1¼ do. drawers, &c.	48	0 0 2	0 8 0
1 do. do. bottle-racks, &c.	120	0 0 1¾	0 17 6
¾ do. do. do.	250	0 0 1½	1 11 3
⅝ do. do. do.	36	0 0 1½	0 4 6

Fitting Steam-ship "Mauritius"—*continued.*

Species.	Quantity.	Rate.			Value.		
		£	s.	d.	£	s.	d.
	feet	per foot					
½-Inch deal drawers, bottle-racks, &c.	228	0	0	1¼	1	3	9
	No.	each					
Swinging candle-lamps	4	0	7	6	1	10	0
With spare glasses	4	0	0	9	0	3	0
Enamelled wash-hand basin, with plug and chain ..	1	0	7	0	0	7	0
Enamelled soap tray	1	0	1	4	0	1	4
Jointed galvanized iron ring to fix do., with double joint and stop	1	0	5	3	0	5	3
Galvanized slop pail	1	0	5	0	0	5	0
3 Gallon japanned water cans, with covers	2	0	8	9	0	17	6
	doz. lbs.	per doz. lbs.					
Palmer's patent wax candles	12½	0	12	6	7	16	3
	No.	each					
Cases for do.	2	0	2	6	0	5	0
Canvas screens for women	..	..			0	13	6
	feet	per foot					
1-Inch deal, inclosing bakery, drying room, dirty clothes room, wash-house, and ablution room ..	990	0	0	1¾	7	4	4½
Fir quarter, 3 × 3, stanchions	268	0	0	1½	1	13	6
	No.	each					
Elm cleats	24	0	0	2	0	4	0
	feet	per foot					
Fir scantling, 3 × 4, false beams to block-down for hammock-hooks	936	0	0	2	7	16	0
	No.	each					
Elm cleats do.	34	0	0	2	0	5	8
	feet	per foot					
1½-Inch deal, washing trough in ablution room ..	24	0	0	2½	0	5	0
1¼ do. do. do. ..	24	0	0	2¼	0	4	6
1½ English elm do. do. ..	2·6	0	0	4½	0	0	11¼
Fir quartering, 3 × 3, do. ..	10	0	0	1½	0	1	3
Lining lead washing trough, and fixing waste-pipe to do., lead, solder, labour	..	..			3	14	0
Fitting 2 long scuppers under washing place, and 8 brass staples to do., and fixing, at Greenhithe ..	..	..			2	8	6
Fir quarter, 2 × 2, grating in ablution room	66	0	0	1	0	5	6
¾-Inch deal do. do.	12	0	0	1½	0	1	6
Lower Troop Deck.							
Fir quarter, 2 × 3, to receive hooks for swinging-trays	186	0	0	1¼	0	19	4½
Fir quarter, 3 × 3, stanchions for cots	96	0	0	1½	0	12	0
	No.	each					
Elm cleats for do.	30	0	0	2	0	5	0
Iron clasps round pillars for do.	2	0	2	0	0	4	0
	feet	per foot					
Fir battens, ¾ × 3, shelves for shakos	668	0	0	½	1	7	10
1-Inch deal, shutters to air funnels	24	0	0	1¾	0	3	6
Fir quarter, 2 × 3, do.	22	0	0	1¼	0	2	3½
Orlop Forward.							
1-Inch deal, lockers, drawers, issuing dresser, &c., in store-room	518	0	0	1¾	3	15	6½
¾ do. do. do.	104	0	0	1½	0	13	0
Fir quartering, 2½ × 3, clothes racks	192	0	0	1¼	1	0	0
Do. battens, 1 × 4, do.	456	0	0	1	1	18	0
Fir quarter, 3 × 2, knapsack racks	56	0	0	1¼	0	5	10
Do. 3 × 3, do.	12	0	0	1½	0	1	6
Fir battens, 3½ × 1, do.	1,585	0	0	1	6	12	1
After Hold.							
	feet	per foot					
Fir quartering, 2 × 3, hand rails to ship's step-ladders	176	0	0	1¼	0	18	4
	No.	each					
Small screw ring-bolts	18	0	0	2½	0	3	9

Fitting Steam-ship "Mauritius"—*continued.*

Species.	Quantity.	Rate. £ s. d.	Val £ s. d.
Large square staples	No. 4	each 0 0 1½	0 0 6
Back-flap hinges and screws	pair 2	per pair 0 1 2	0 2 4
Screws, ⅞-inch, 3 dozen at 1*d.*; 1-inch, 1 dozen at 1¼*d.*; 1¼-inch, 22 dozen at 2*d.*; 1½-inch, 16 dozen at 2¼*d.*; 1¾-inch, 14 dozen at 2½*d.*; 2-inch, 13 dozen at 3*d.*; 3-inch, 1½ dozen at 6*d.* per dozen	..	..	0 13 11¼
Tower bolts and screws, 6-inch	No. 10	each 0 0 6	0 5 0
H-hinges and screws, 4-inch	pair 2	per pair 0 0 4½	0 0 9
Cross garnet hinges and screws, 20-inch	4	0 1 6	0 6 0
Do. do. 18-inch	4	0 1 4	0 5 4
Do. do. 16-inch	5	0 1 2	0 5 10
Do. do. 14-inch	1	0 1 0	0 1 0
Stay hooks and staples, 10 of 3-inch, at 1½*d.*; 2 of 12-inch, at 6*d.*	..	..	0 2 3
Screw hooks	No. 76	each 0 0 1	0 6 4
Hoop-iron punched, and nails	lbs. 7	per lb. 0 0 2¼	0 1 3¾
Screw bolts and nuts, 9 × ½	No. 130	each 0 0 4½	2 8 9
Do. 7 × ⅜	33	0 0 4	0 11 0
Do. 4 × ¼	24	0 0 2½	0 5 0
Tin for lining lockers	sheet. 150	per sheet 0 0 2¼	1 8 1½
Wrought tacks	M. 2	per M. 0 1 4	0 2 8
Padlocks	No. 20	each 0 0 8	0 13 4
Hasps and staples	14	0 0 3½	0 4 1
Strong meat-hooks, to order	10	0 0 6	0 5 0
Smaller do.	12	0 0 1½	0 1 6
Screw eyes	6	0 0 2½	0 1 3
Drawer handles	42	0 0 2	0 7 0
Screws for do.	doz. 8	per doz. 0 0 1	0 0 8
Solid ward dead locks, 5-inch	No. 2	each 0 3 6	0 7 0
Do. do. 6-inch	1	0 3 9	0 3 9
Brass hooks	6	0 0 1½	0 0 9
Square-headed coach screws	6	0 0 2½	0 1 3
Glass, paper, glue, &c.	..	..	0 3 6
Deck nails	lbs. 24	per lb. 0 0 2	0 4 0
Clout nails	No. 1,400	per 100 0 0 2	0 2 4
Nails, 1,025 at 2*d.*, 2,050 at 2¼*d.*, 3,075 at 3*d.*, 4,150 at 5*d.*, 6,200 at 8*d.*, 500 at 1*s* ...	..	..	3 17 3¼
Iron stay for table, with 3 thumb-screws	No. 1	each 0 8 0	0 8 0
Double wicker knife tray, lined with tin	5	0 8 6	2 2 6
Do. large plate baskets	3	0 7 6	1 2 6
Chub's patent locks, for purveyer's cabin	2	0 11 6	1 3 0
Roberts' patent stove	1	1 10 0	1 10 0
Iron funnel and elbows for do., 10 feet	..	..	0 7 0
Stand for do., lined with lead	1	0 7 0	0 7 0
Case for do.	1	0 4 6	0 4 6
Perforated zinc, hospital, &c.	feet 96	per foot 0 0 6	2 8 0
Do. butcher's house, &c.	48	0 0 5	1 0 0
Joiners' labour: building butcher's house on upper deck, with doors, shelves, &c.; making and fixing butcher's block; fitting circular cants to air funnels, fixing and screwing down flanges for air funnels on			

Fitting Steam-ship "Mauritius"—*continued.*

Specie.	Quantity.	Rate.			Value.		
		£	s.	d.	£	s.	d.
quarter-deck, and cutting holes and fitting large do. by companion; enlarging sleeping berths; putting on locks, shifting furniture, &c., in officer's cabin; building surgery between decks; making and fixing two dressers in do., with drawers underneath; fitting bottle-shelves, &c., in surgery; building ablution room between decks, with long washing trough and grating in do.; building wash-house, drying room, bakehouse, and dirty clothes room; fitting, sliding, and hanging doors to all the aforesaid houses; fitting false beams overhead on upper troop deck to block down for hammocks; fitting shelves in shako room, putting up and cleating stanchions for cots; fitting up store-room with dressers, lockers lined with zinc, drawers, issuing dresser, and clothes racks; building knapsack racks on orlop deck, fitting and cleating ship's step-ladders, and fitting hand-rails to ditto ..	..	..			50	12	
	lbs.	per lb.					
Candles for workmen	28	0	0	7½	0	17	6
Waterman and boat hire, workmen's waterage, &c., for above work	..	..			6	12	6
Labourers assisting to load and unload craft	..	..			2	2	6
Painters: knotting, priming, stopping, and painting butcher's house, outsides of wash-house, bakehouse, ablution room, &c., inside and outside of surgery, air funnel, inside and out of ditto	..	..			4	10	0
Stores put on board.							
	No.	each					
Galvanized iron bed bottoms	18	0	9	6	8	11	0
Elm stanchion, cleats, and nails in case	120	0	0	2	1	0	0
	feet	per foot.					
Fir quartering, 3 × 3, spare stanchions, planed and rounded	96	0	0	2	0	16	0
1-Inch deal, spare side boards, ditto	96	0	0	2	0	16	0
				£	734	6	0

Height of Berths aboard the Steam Transport Ships, "Melbourne" and "Mauritius."

"*Melbourne.*"

	ft.	in.
Height from deck to deck	7	0
Ditto from lower deck to top of bed bottom	2	3
Ditto from bed bottom to underside of upper deck	4	9

"*Mauritius.*"

	ft.
Height from lower deck to top of lower bed bottom	1
Ditto between lower and upper berths	3
Ditto from upper bed bottom to underside of upper deck	4

N.B.—The berths in one height were built the same height from the deck as those in the "Melbourne."

Steam-ship "Melbourne."

	Fore and Aft. ft.	Fore and Aft. in.	Athwart. ft.	Athwart. in.	Height. ft.	Height. in.
Ablution rooms	12	6	6	6	7	6
Wash-house and dirty clothes	10	0	6	6	7	6
Butcher's house	6	0	6	6	7	6
Baker's ditto	8	0	6	6	7	6
Privies on deck (6 in number), each ..	4	2	4	9	7	6
Drying room	10	6	6	6	7	6

Surgery, as per plan herewith. (See page 337.)

Ports and Hatchways.—26 ports (13 on each side), 4 measuring about 5 feet square, and the others about 2 feet 10 inches square. 3 Hatchways—the main hatchway, 10 feet 6 inches by 7 feet; the others about 6 feet square each.

Gilmore's patent funnel ventilators fitted, 2 forward and 2 against after bulkhead, 12 inches square at base, 12 inches diameter upwards.

Oval deck air-tubes, size, 12 inches by 4 inches, 18 on main deck, 2 on poop, and 6 on forecastle, trunked down to 'tween decks.

	ft.	in.	ft.	in.	ft.	in.
Issuing room	10	0	8	6	6	6
Storeroom	16	0	9	0	6	6
Pack-room, including arm-rack	14	0	9	0	6	6

The above dimensions are as near as can be ascertained.

Steam-ship "Mauritius."

	Fore and Aft. ft.	Fore and Aft. in.	Athwart. ft.	Athwart. in.	Height. ft.	Height. in.
Ablution room	12	0	7	6	8	0
Wash-house	10	0	7	6	8	0
Dirty-clothes room	6	0	7	6	8	0
Butcher's house	7	0	7	0	6	0
Drying room	10	0	7	6	8	0
Bakehouse	10	0	7	6	8	0
Privies on deck (8 in number), each	4	2	4	6	6	0
Issuing room and storeroom in orlop ..	13	6	12	0	6	9
Pack-room	13	0	11	0	6	9

Number of Ports and size of each.—61 side lights on each side, 11 inches in diameter; 2 large ports or gangways, 6 feet 9 inches by 6 feet on each side of main deck; 5 ports, 2 feet square, on each side, 'twixt decks.

Hatchways.—8, measuring 8 feet 6 inches by 7 feet; 3, measuring 3 feet by 3 feet 6 inches.

Ventilators:—

Fore compartment, lower deck.—4 Gilmore's funnels, 12 inches square at base; 2 ship's ventilating funnels, already in, about 18 inches diameter.

Middle compartment, lower deck.—6 Oval deck air tubes, 12 inches by 4 inches, trunked down from upper deck; 4 ships funnels, already in, about 18 inches diameter.

After compartment, lower deck.—6 Gilmore's funnels, fitted, 12 inches square at base; 1 large funnel fitted, about 18 inches diameter; 1 ditto, already in.

Upper troop deck.—4 Oval deck tubes, 12 inches by 4 inches, fitted in addition to those fitted for lower deck.

Surgery, as per plan.

List of Articles fitted and put on board the Steam-ship "Mauritius," at Deptford, January 1860.

Articles supplied from Transport Stores and fitted by the Contractors.

10 Cast-iron air tubes.
40 Screw bolts and nuts for ditto.
10 Gilmore's patent air funnels.

Articles supplied and fitted by Contractors.

8 Sleeping berths, with wooden bottoms, in two heights, 6 feet by 2 feet 3 inches, containing one in each, 8 persons.
6 Sleeping berths, with wooden bottoms, in two heights, 6 feet by 3 feet, containing two in each, 12 persons.
6 Step ladders, short, with iron straps.
Side benches to women's berths, &c.
Mess tables in all the compartments.
Benches do.
1,108 Hammock hooks.
Accoutrement battens.
1,291 Knapsack hooks, of wood, 1,161 nailed on, 130 put on board in case.
Bulkheads of baggage room and in after compartment on lower deck, to separate women from stores.
216 Arm-stands for muskets.
8 Upper deck privies, double, shoots lined with lead, 16 seats.
2 Urinals, lined with lead.
6 Wooden trunks to air tubes.
Grating bulkhead, inclosing storeroom on orlop, and shako room on lower troop deck.
Guard battens and stanchions to hatchways.
36 Persons' sleeping berths, hospital, with galvanized iron bottoms, 1 tier.
168 Ditto ditto 2 tiers.
2 Portable benches or forms.
230 Iron rings for chamber utensils, galvanized.
6½ Gross screws for ditto.
200 Swinging trays with lanyards.
200 Turned lifting handles and ditto.
248 Screw hooks in deck, for ditto.
All the fir scantling, screw bolts and nuts used for blocking-down hammocks, upper troop deck.
Butcher's house, built on upper deck, with butcher's block and fittings.
6 Cast-iron flanges for air funnels on quarter deck.
1 Large wrought-iron air funnel by companion, on starboard side of quarter deck, with iron flanges.
Surgery, built between decks, and fitted with dresser and drawers at each end, bottle shelves, &c.
4 Swinging candle lamps.
12½ Dozen lbs. Palmer's patent candles, in two cases.
1 Wash-hand basin, 1 slop pail and 1 soap tray.
2 3-gallon japanned water cans, with covers.
Bulkheads, inclosing bakery, drying room, dirty clothes room, wash-house, and ablution room.
1 Long trough in ablution room, lined with lead.
1 Grating on deck in ditto, of wood.
Stanchions and iron clamps for cots.
Shelves in shako room.
Lockers, drawers, clothes racks, issuing dresser, in storeroom on orlop deck.

Knapsack racks on orlop deck.
5 Double wicker knife trays, lined with tin.
3 Double wicker large plate baskets.
1 Roberts' patent stove, with stand and iron funnel, in case.
18 Spare galvanized iron bed bottoms.
96 Feet spare fir stanchions, 3 feet by 3 feet, for berths.
96 Feet spare lee boards, 1 inch, for ditto.
120 Elm stanchion cleats, in case.

The above charged to Admiralty.

4 Stretchers, with slings.
492 Feet run zinc tubing, 4 inch, in three cases.
50 Square yards sheet zinc, in case.
14 lbs. zinc nails.
2 Surgeons' operating tables.

The above charged to the War Department.

LIST of Articles fitted and put on board the Steam-ship "Melbourne
Deptford, January 1860.

Articles supplied from Transport Stores, and fitted on board by Contra

26 Cast-iron air tubes.
104 Screw bolts and nuts for ditto.
4 Gilmore's patent air funnels.

Articles supplied and fitted by Contractors.

3 Persons' sleeping berths in poop.
1 Wash-hand stand, with lid.
3 Hatchway step ladders, with iron handrails.
Mess tables between decks.
Benches ditto.
1,086 Hammock hooks between decks and in poop.
950 Wood knapsack hooks, 750 nailed on, 200 put on board in case.
Bulkhead across ship between decks.
Arm-racks fitted in orlop for 216 muskets.
6 Upper deck privies, double, shoots lined with lead, 12 seats.
1 Urinal lined with lead.
6 Trunks to air tubes, wood.
Grating bulkhead on orlop decks, inclosing store room.
Guard battons and stanchions to hatchway.
120 Persons' sleeping births, hospital, with galvanized iron bottoms, 1 ti
20 Ditto ditto 2 ti
3 Hanging tables.
120 Swinging trays with lanyards.
120 Hooks in deck for ditto.
120 Lifting handles, turned with lanyards.
120 Hooks in deck, for ditto.
120 Iron rings for chamber utensils, galvanized.
3½ Gross screws for ditto.
120 Knapsack racks under sleeping berths.
12 Spare iron bed bottoms.
12 Spare wooden stanchions, 3 feet by 3 feet.
12 Spare lee boards for berths.
100 Spare elm cleats for stanchions.

Houses built on upper deck for butcher; drying-room lined with zinc; ablution room fitted with long trough, lined with lead, and grating on deck; bakery and wash-house; two stands for hearths, and materials for two houses to cover ditto, and sheet-iron to line ditto, put on board.
1 4-Feet cooking apparatus, with hot plate and set of spare bars, &c.
1 Large oven, with doors and shelves.
1 3-Feet baking apparatus, with boiler and cock.
1 12-Gallon boiler, galvanized, with brass cock, to stand on hot plate.
2 Cooking apparatus, with boilers and brass cocks, for houses to be built by carpenter.
3 Sets of fire irons.
1 Iron baking pan and stand.
24 Square tin pans for baker's oven.
Iron flanges on deck; zinc pipes to convey air from between decks; iron pipes to connect ditto to fire hearth, packed in cases.
Platform laid over hatchway; surgery built between decks, and fitted with dresser, drawers, bottle-shelves, &c.
4 Swinging candle lamps.
1 Slop-pail.
1 Wash-hand basin.
1 Soap dish.
1 Cart for surgical dressings, with basin, slop-pail, and hot and cold water vessels.
2 Japanned water jugs.
12 Dozen lbs. Palmer's candles, in two cases.
24 Camp stools.
Drawers in stern-lockers for linen.
Lockers, drawers, shelves, clothes racks and issuing dresser in store room on orlop.
Knapsack racks built on orlop.
4 Wicker knife trays, lined with tin.
3 Wicker large plate baskets.
1 Roberts' patent stove, packed in case, with stand and iron funnels.

The above charged to Admiralty.

4 Stretchers with slings.
504 Feet zinc tubing, 4 inch, in two casks.
14 lbs. zinc nails.
50 Superficial feet sheet zinc, in case.
1 Surgeon's amputating table.

The above charged to War Department.

SCHEDULE of Fittings, &c., put up or supplied on board Steam-ship "Mauritius," Regular Transport, at Deptford, December 1859, January 1860.

SPAR OR WEATHER DECK.

8 Double privies; troughs lined with lead.
Butchery, built of 1-inch deal, ploughed and tongued with 1½-inch; top-grooved, and tongued and caulked; fitted with perforated zinc in upper part, all round; door hung, fitted with hinges and padlock; house painted, and fitted inside with butcher's block, shelf, meat-hooks, &c.
10 Air-funnels, supplied from Transport Store, lengthened, fitted, and supplied with canvas coats, painted.
10 Air-tubes, fitted.
40 Screw-bolts for do., with nuts, supplied.
1 Large air-funnel on quarter-deck, supplied and fitted.

Cuddy.

Widening sleeping-berths in 6 cabins, shifting furniture, &c.
Cot-hooks in cabins.
Chubb's locks to purveyors' cabins.
Writing-labels for cabins.

MAIN OR UPPER TROOP DECK.

Surgery, inclosed with 1-inch deal, ploughed and tongued with stanchions, 3 feet by 3 feet, perforated zinc round upper part; two pairs of folding doors, with hinges, locks, and bolts; dresser at each end of surgery, with drawers underneath; bottle-racks, &c., fitted alongside and over dresser; metal wash-hand basin and plug; ditto, slop-pail and soap-dish; iron ring and fittings for ditto; two water cans; cot-hooks and brass hooks for towels.
2 Swinging candle-lamps, supplied and fitted.
Candles in two cases.
1 Amputating table.

Port Side.

Bakery, built with 1-inch deal, ploughed and tongued.
Drying-room, with sliding-door, and painted.
Dirty-clothes room.
Washhouse.
Ablution room, fitted with trough, lined with lead, and pipe to carry off water.

Both Sides.

6 Trunks to air-tubes, fitted between decks, and caulked.
262 Hammock-hooks.
Fir quartering, 3 feet by 3¾ feet; blocking ditto down from upper deck.
Screw bolts and nuts, ditto.
Elm cleats and nails, ditto.

Starboard Side.

8 Hospital berths, in one tier along ship's side, fitted with galvanized iron bottoms.
8 Knapsack racks.
Arm-stand.
Mess-table.
Benches.

LOWER TROOP DECK.—*Fore Compartment.*

Dimensions:—Height, 8 feet 3 inches from deck to deck; breadth, 26 feet 9 inches forward, 36 feet 9 inches aft; length 41 feet.
10 Hospital berths in one tier, 6 feet 3 inches by 2 feet 6 inches.
40 ditto in two tiers, in blocks of four.
216 Hammock hooks.
60 Hooks for swinging trays.
Fir quartering between iron beams to receive ditto.
8 Hooks for cots.
2 Iron clasps round pillars for cots.
40 Feet fir quartering, 3 feet by 3 feet, stanchions for ditto.
14 Elm cleats, with nails, for ditto.
10 Racks, under bed places, for knapsacks.
370 Knapsack hooks.
Mess-table in midships.
Benches in ditto, portable.
Numbering berths.

Middle or Centre Compartment.

Dimensions:—Height, 8 feet from deck to deck; breadth, 38 feet; length, 72 feet 6 inches.
4 Sleeping berths in two tiers, 6 feet by 2 feet 3 inches, with wood bottoms.

4 Hospital sleeping berths, 6 feet 3 inches by 2 feet 6 inches, in two heights
72 Ditto, in blocks of four, galvanized iron bottoms.
Additional depth of head boards and parting boards.
98 Hammock hooks.
76 Hooks for swinging trays.
296 Knapsack hooks.
Mess tables, 18-inch, with fixed benches along ship's side, the whole length.
Arm-stands against bulkhead.

After Compartment.

Dimensions:—Height, 8 feet; breadth, 37 feet forward, 24 feet aft; length, 67 feet 9 inches.

18 Hospital berths in one tier, 6 feet 3 inches by 2 feet 6 inches.
56 ditto in two tiers, in blocks of four.
Additional depth of head boards and parting boards.
456 Hammock hooks.
92 Hooks for swinging trays.
Fir quarter, 2 feet by 3 feet, to receive ditto.
440 Knapsack hooks.
18 Racks under bed places for knapsacks.
Mess table in midships, 36 feet by 2 feet 3 inches.
72 Benches in ditto.
56 Feet fir quarter, 3 feet by 3 feet, stanchions for cots.
16 Elm cleats and nails.
12 Hooks for cots.
Numbering berths.
1-inch Bulkhead, with sliding door, to inclose space for baggage room on port side.
1-inch Bulkhead, partly lowered on starboard side, to inclose women and children.
Canvas screens to hatchway.
Additional sleeping berths, in two heights, 6 feet by 3 feet, with wooden bottom, for women and children, 12 persons.
1-inch Bulkhead, to part off space for women; additional mess tables and benches for women.
18 Knapsack hooks.
Bench to women's berths.

Orlop Deck.

Grating bulkhead to inclose storeroom; and
Knapsack room.
Knapsack racks.
Clothes racks.
Bottle racks.
Dresser with lockers underneath, tinned.
Drawers under ditto.
Issuing dresser, with drawers underneath, with flap over doorway.
Hooks in deck.
Door hung.
Flap hung.

After Hold.

Laying flat and building magazine.
Stretchers, with slings, complete.
Palmer's patent candles, in two cases.
Knapsack hooks and nails, in two cases.
Elm cleats for stanchions, and nails.
Sheet zinc, in case.
Zinc tubing, in two cases.
Zinc nails.
Galvanized iron bed-bottoms.

Spare stanchions for sleeping berths, 3 feet by 3 feet.
Ditto side boards.
Roberts' stove, with stand and funnel, in case.
Step ladders.
Hand rails.
Swinging trays.
Handles and lanyards.
Iron rings to screw to stanchion for chamber utensils.
Screws for ditto.

SCHEDULE of Fittings put up and supplied to Steam-ship "Melbourne," Regular Transport, at Deptford, December, 1859, January, 1860.

UPPER DECK.

6 Privies, double troughs, lined with lead.
1 Urinal, lined with lead.
26 Air-tubes, fitted in deck, supplied from Transport Store.
4 Air-funnels lengthened, supplied from ditto.
4 Ditto, fitted.
104 Screw-bolts and nuts for air-tubes.
Screws for air-funnels.
6 Wooden trunks to air-funnels and tubes, fitted and caulked.
Zinc and iron tubing; two cast-iron flanges, to convey air from between decks to cooking apparatus.
Cooking apparatus, oven, boiler, &c.
2 Hearths with boilers.
Smiths' altering and shifting doors, iron galley.
Stands for boilers, lined with iron.
Materials for galley to be put up in the country.
Butchery, built of 1-inch board, ploughed and tongued.
Top 1½-inch deal, grooved, and tongued, and caulked.
Sliding door with padlock; sliding shutters, fitted with perforated zinc; hooks.
1 large chopping-block.
Shelves and latrine, water end and front.
Drying-room, built as butchery.
Lined with zinc.
1 Sliding door, with lock.
2 Sliding shutters.
Ablution room; sides, ends, and back of 1-inch deal, ploughed and tongued; tops, 1½-inch deal, grooved and tongued.
1 Sliding door, with padlock.
1 Hanging ditto, and end to shift with five bolts.
3 Sliding shutters.
Trough in ditto, 8 feet long, 1 foot 6 inches wide, lined with lead, and 2-inch pipe to scupper.
Grating on deck.
Washing room on opposite side, same size as ablution room, fitted in the same way, except leaded trough.
Bakery, built opposite drying room and butchery, with 1 sliding door and 2 sliding shutters.
Dresser and shelves in ditto, and iron screw hooks.
All the houses on deck painted.
Repairing water-closets for officers on quarter-deck, cutting perforations in doors.
Enlarging berths in poop.
1 Surgeon's table in Purveyor's cabin.
Sleeping berths and furniture in mate's cabin removed for Agent, and fitted in another cabin.

Taking down and refitting sleeping berth.
Wash-hand stand in Principal Medical Officer's cabin; two cot-hooks.
Enlarging sleeping berths for sick officers.
Bulkhead, with perforated zinc, in after cabin.
2 Sleeping berths in ditto.
1 Washstand with lid.
2 Cot-hooks.
Altering door to cabin and hanging door.
Zinc over ditto; iron rim lock, brass furniture.
Fitting zinc over skylight in way of air funnels.
Alterations in Agent's cabin.
Labels for cabin doors.

Orlop Deck.

216 Arm racks.
Large knapsack rack near ditto.
Bulkhead in midships.
Shelf for knives, &c., with partitions.
Scantling on deck to secure plate baskets.
Plate baskets lined with tin.
Grating bulkhead for inclosure of storeroom.
1 Door to ditto, with lock.
1 Hanging flap.
1 Surgeon's hanging table.
Large lockers in storeroom, lined with tin, fitted with drawers underneath, and dresser top.
Issuing dresser, with shelves and drawers under ditto.
Clothes racks over dresser, along ship's side, in storeroom, and against grating bulkhead.
108 Feet 4-inch zinc tubing.
396 Feet ditto, in two cases, for use of ships on station.
12 Galvanized iron bed bottoms.
12 Spare 3-inch fir stanchions for sleeping berths.
1 Deal ditto, side board, ditto.

BETWEEN DECK.

Main or Lower Deck.

Dimensions:—Length, 208 feet; breadth, 35½ feet; height, from deck to deck, 6 feet 4 inches.

20 Sleeping berths forward, for orderlies, in two heights, with galvanized iron bottoms. 12 Built round bow.
120 Hospital berths in one height, for sick, with galvanized bottoms, 6 feet 3 inches by 2 feet 6 inches. Additional parting-boards and head-boards to all the berths built on blocks
1,078 Hammock hooks.
120 Swinging trays.
120 Handles and lanyards.
120 Knapsack racks under sleeping berths.
120 Galvanized iron rings to screw to stanchions, for chamber utensils.
Screws for ditto.
240 Hooks in upper deck for tables and handles.
Numbering berths, 3 numbers each.
Knapsack hooks.
8 Lifting mess-tables, 12 feet long.
16 Benches ditto ditto.
Iron work to ditto.
Midship mess table, forward and aft.
Benches ditto.
20 Small fixed tables in way of ports, each 3 feet 6 inches by 1 foot 6 inches.

Hatchway guards to three hatchways.
Bulkhead between decks, right aft, with perforated zinc.
Surgeon's table, for serjeant.
3 Step-ladders and oak steps, extra size.
2 Iron hand-rails.
Bulkhead between decks to separate space for cargo.

Surgery.

1½-Inch platform laid over grating on lower deck, lined with ¾-inch board.
Enclosed with 1-inch ploughed and tongued bulkhead, fitted with folding doors, bolts and locks.
Perforated zinc fitted in upper parts of sides and ends, instead of louvre boards, first fitted.
Water table and brass hinges, fitted to top of skylight.
Large dresser, with drawers under ditto, fitted at one end of surgery.
Shelves for jars and bottles, fitted at end and sides.
2 Swinging candle lamps.
1 Galvanized slop-pail.
1 Washstand, plug, basin.
1 Soap-dish.
Iron ring fitted for basin, and shelf for soap dish.
4 Cot-hooks.
Iron stays and staples for skylight.
6 Brass hooks for towels.
1 Amputating table.
Painting surgery inside and out.
2 Water cans.
Cart for water and slop-pail, with compartments.
2 Zinc water bottles.
1 Slop-pail, with wash-hand basin and plug.
4 Stretchers, with slings complete.
12 Dozen lbs. Palmer's patent candles, in two cases.
200 Knapsack hooks and nails, in case.
100 Elm stanchion cleats and nails, in case.
50 Square yards sheet zinc, in case.
14 lbs. zinc nails.

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